

AUGUST 1996

Professional

CUSTOMER INTERACTIVE SYSTEMS

Who's Being Served?

Building Client-Server
Computing On The HP 3000

PAGE 31

INsite Case Studies:
Delta Airlines Document Management
Home Depot Report Writing

PAGE 20

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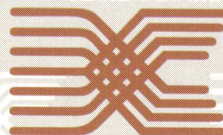
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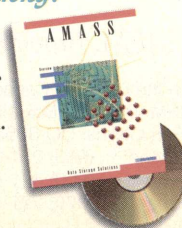
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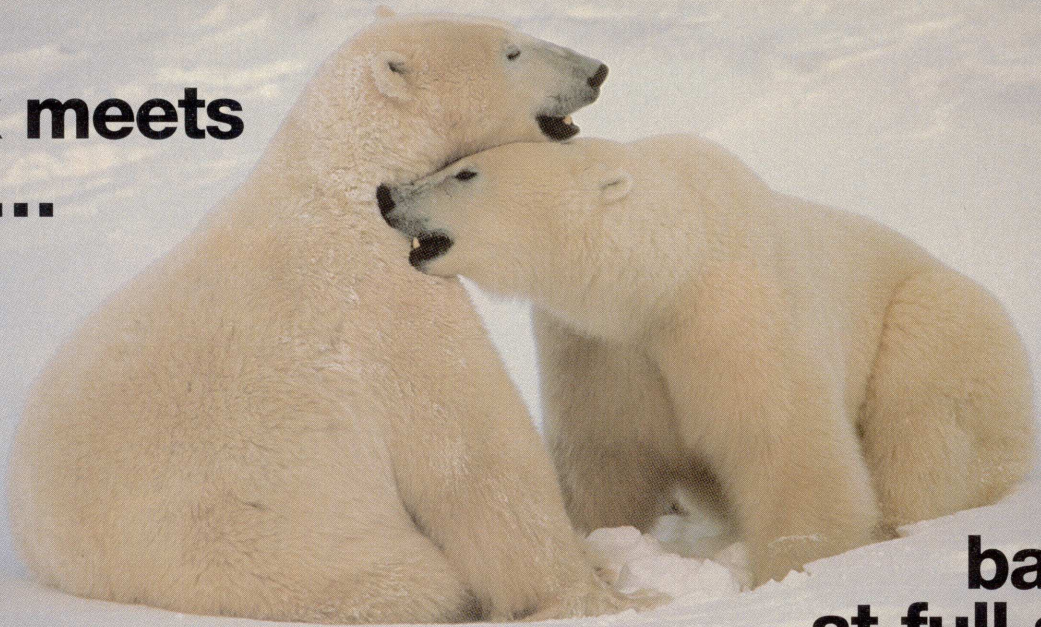
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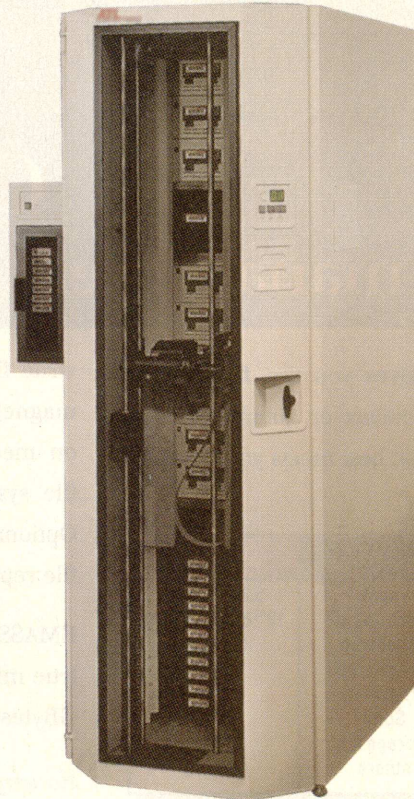
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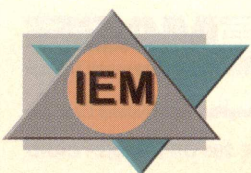
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A WHITE PAPER: Building Client-Server Applications On The HP 3000, Part 1

31

By Rohan Hall

The idea of client-server applications appeals to professionals who have gotten used to reporting data with a click of a button. Now imagine accessing legacy HP 3000 data with the same click of a button, then manipulating and displaying the data, while selectively importing it into an Excel spreadsheet. Unfortunately, there exists no real information that addresses client-server development on HP 3000 systems. This three-part article fills that knowledge gap by providing information for HP 3000 IT professionals about building such an application.

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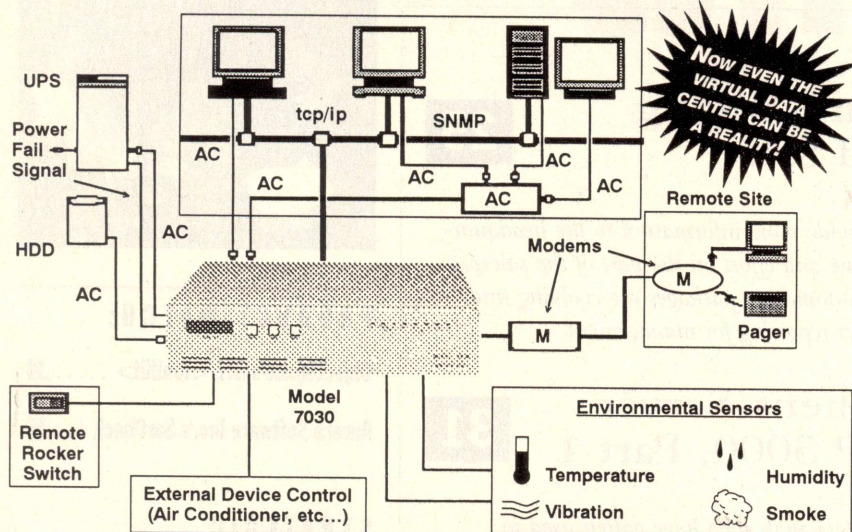
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HP PROFESSIONAL ISSN 0896-145X is published monthly by Cardinal Business Media Inc., 1300 Virginia Dr., Ste. 400, Fort Washington, PA 19034. Subscriptions are complimentary for qualified U.S. and Canadian sites. For reprints, contact Reprint Management Services, 505 E. Airport Rd., Lancaster, PA 17601; (717) 560-2001, FAX (717) 560-2063. Periodicals postage paid at Fort Washington, PA 19034, and additional mailing offices. POSTMASTER: Send all correspondence and address changes to HP PROFESSIONAL, P.O. Box 3053, Northbrook, IL 60065. COPYRIGHT © 1996 by Cardinal Business Media Inc. CANADIAN POSTMASTER: Send all correspondence and address changes to Cardinal Business Media, C/O N.I., P.O. Box 44, RPO Rockwood Mall, Mississauga, ON L4Z 9Z9. All rights reserved. No part of this publication may be reproduced in any form without written permission from the publisher. All submitted manuscripts, photographs and/or artwork are sent to Cardinal Business Media, Inc. at the sole risk of the sender. Neither Cardinal Business Media, Inc. nor HP PROFESSIONAL magazine is responsible for any loss or damage. HP PROFESSIONAL is an independent journal not affiliated with Hewlett-Packard Company. HP and Hewlett-Packard are registered trademarks and HP PROFESSIONAL is a trademark of Hewlett-Packard Company. Third class enclosure in this version of HP Professional.

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12:30 p.m. – 1:15 p.m.

Eric Hahn, Senior Vice President,
Enterprise Technology
Netscape Communications Corp.

Wednesday, October 9

9:00 a.m. – 9:45 a.m.

William H. Gates, Chairman
and Chief Executive Officer,
Microsoft Corporation

1:15 p.m. – 2:00 p.m.

Alok Mohan, President and
Chief Executive Officer, SCO

Thursday, October 10

9:00 a.m. – 9:45 a.m.

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Automated Sales Forced

Customer interaction and automated sales support. These two phrases conjure different meanings to different people at different times.

For example, last week, I went to buy a boombox at Best Buy, one of those electronics warehouses where the price and the customer are always right. After 20 minutes of evaluating the stereos on display, I selected a Magnavox radio.

After hunting down a sales "assistant," she told me that there were none there. That was obvious. I said I knew that and was wondering if, per chance, they had some anywhere else within the store. "I'll have to go into the back and see," was the bland, unemotional answer. As if I was going to say, "No, no! Don't put yourself to all that trouble!"

I followed her down to the end of the aisle where another assistant was clicking away at a computer terminal. "Do we have any of theese in the back," she huffed. "I'll have to check," he mumbled back. Now, I'm thinking, why does everyone "have to" perform their job? After a minute or two of "click, click, click" on the keyboard, he looked at the terminal, looked at her and said "No." She then looked at me and said, "No." Not "sorry, we'll get one ordered" or "they should be in tomorrow." Just no. By the way, neither of them ever made it to the mystical, magical land of the "back" to find out for certain.

After re-evaluating my choices, I again went back to "terminal man" at the end of the aisle. After trying to pretend that I was invisible, one sales assistant turned her back on me and walked away, while the "terminal man" continued clicking away with the intensity of ending world hunger, finalizing Mid East peace plans and designing a mechanical heart.

So, I politely gained his attention from his clicking with "Yo, hi. I'm standing here. Any idea if and when the stereo will be in?" "I'll HAVE to check." Click, click, click, clickity, click. A glance at the screen, then at the display, click...pause...click, click, click. "No." "No? That's it," I asked. "Well you see," (here it comes, the technical explanation), "the computer says there haven't been any ordered and I can't tell you when they will be ordered." Now my curiosity was piqued, "Why not?" "Because. The computer does all the ordering and we don't know what it plans to order."

"I see." Now the awkward moment of silence. "I suppose I could check at one of our other stores to see if they have any." "Now you're thinking." Clickity, click, click. "If they do have it, it will take us a week or so to get it." Whoa, time out click meister. "I can walk out this door, drive to the other store and buy the stereo in an hour, but within your own infrastructure it will take a week to get it." "The computer...." he started "Forget it," I said.

As time was running out and not happy to leave lousy enough alone, I decided on another model. While paying for the boombox, the cashier asked me to re-sign my credit card because my signature had worn off. So I did. Then she had me sign the receipt and compared the signatures. I said, "I bet they match, huh?" "Umm, yeah," she concurred. Finally, on my way out the door I was stopped by one final employee. "I have to sign your receipt." "Why?" I asked of course. "To check that you paid for it." "But you just saw me pay. I wasn't standing more than eight feet away." "I have to sign it," she said persistently. If Mr. Clickity Click had that sense of service, I would've been out of there an hour ago.

Customer interaction and automated sales support. Different meanings to different people. That's why this month we "have to" explore the hot subject of Sales Force Automation. To some it means clickity click, to others verifying credit card numbers on-the-fly and still others simply checking orders. But to some innovators, it actually means making a sales representative's job easier, reducing costs and satisfying customer needs, all while producing useful data.



**Charlie
Simpson**

simpsoncm@cardinal.com
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INDUSTRY WATCH

Charlie Simpson

BAD CUTS: HP DISCONTINUES DISK DRIVE MANUFACTURING

It would appear things aren't all "hunky dory" at Troop HP. Due to a decline in the rate of order growth across businesses and geographies during the first two months of the quarter, HP has discontinued manufacturing disk drive mechanisms. HP's Disk Memory Division (DMD) — located in Boise, Idaho and Penang, Malaysia — will cease operations, resulting in a pre-tax charge against earnings of approximately \$150 million in the company's 1996 fiscal third quarter, which ended July 31.

The closure of DMD will add to the overall decline in order growth. Based on incoming order levels for the first two months of the quarter, order growth is likely to be significantly below the 24 percent increase HP reported in the second quarter.

Douglas K. Carnahan, HP senior vice president and general manager of the Measurement Systems Organization, which includes the Disk Memory Division, said in a corporate press release, "Today's decision will enable us to focus on enhancing our market-leadership position in tape backup, CD-recordable products, and optical and tape libraries. This action makes sense for HP because our share of the disk drive market has been declining in a very tough environment. But we'll continue to support DMD's installed-base customers."

DMD employs 1,680 people, with 1,150 located in Boise and 530 in Penang. These employees will receive priority consideration for job openings at HP operations in Boise and Penang, which are large, multidivision complexes each with total employment of more than 4,000 people.

The company said the \$150 million third-quarter pre-tax charge will be for

NOTABLE QUOTABLE

“HP is seeing the effects of customers and channel partners who are adjusting their inventories and capital spending.”

— Lew Platt, HP chairman, president and CEO, commenting on a slowdown in order growth at HP.

inventory and other asset adjustments, as well as for severance incentives for qualified employees who choose to leave the company. The charges do not include DMD's anticipated operating losses in the second half of fiscal 1996, the total of which is expected to be comparable to the approximately \$100 million in operating losses incurred in the first half of fiscal 1996. The second-half losses are expected to be higher in the third quarter than in the fourth quarter.

Slowdown Across The Board

HP noted that order growth has slowed this quarter in many product lines and most geographies. In addition to disk drives, order growth has slowed in several areas of the computer business, as well as in a wide range of measurement businesses, compared with the strong growth rates seen in the first half of the fiscal year. Order growth in the Americas and Asia Pacific is below the levels achieved in the second quarter and in the same quarter a year ago.

GOOD CUTS: PC PRICES SLASHED

HP cut prices across its line of HP Vectra Series PCs. The Pentium-based HP Vectra commercial PCs now will begin at \$1,262, while the Pentium Pro-based HP Vectra high-perfor-

mance PCs now start at \$4,121. The prices on some models of the HP Vectra 500 Series small-business PCs have an initial price of \$1,426.

HP will report its results for the third quarter during the week of Aug. 12, 1996. Current and historical financial information on HP is available at HP's Financial Online site on the Web at www.hp.com/go/financials

GO NAVY

Sylvest Management Systems Corp. (Lanham, Md.) has won a five-year \$13.4 million hardware and software support contract to maintain a computer network that collects payroll data and distributes biweekly paychecks to active navy personnel worldwide.

Under the Navy Pay and Personnel Source Data Systems contract, Sylvest will provide technical support for the Navy's Bureau of Personnel (BUPERS). Sylvest will operate a helpdesk at the Washington Navy Annex in Arlington, Va.

Under a separate contract awarded last year, Sylvest is installing HP 3000 Series 900 microcomputer systems to replace the proprietary HP 3000 Series 70 minicomputer mainframes currently running the payroll network. This new contract means Sylvest is now responsible for all facets of the Navy's computer payroll operations, from hardware and software installation to maintenance, troubleshooting and helpdesk.

NINETEENTH NERVOUS BREAKDOWN

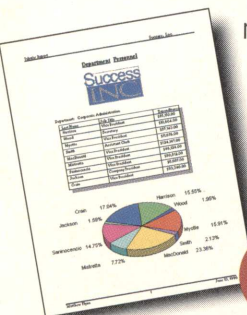
The 1994 Bureau of Labor Statistics figures for injuries and illnesses serious enough to keep people away from work, show that repetitive typing or key entering cases had decreased since 1993. In fact, repetitive typing or key-

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ing represents 13,252 cases or only .6 percent out of a total of 2.25 million cases. The total number of injuries attributed for all repetitive motion was just about 92,500 cases, or 4 percent of total.

Maybe that's why Judge Garret E. Brown Jr. of the U.S. District Court of New Jersey dismissed the case of Schneck vs. IBM, granting the defense's motion for a summary judgment. In his opinion, Judge Brown noted that "the plaintiffs failed to offer any evidence of the alleged dangerous propensities of a keyboard."

The case was originally brought in 1992 by Beverly Schneck, a 63-year-old retiree who worked as a data processor for 15 years at Rutgers University. Schneck operated two different IBM card punching machines as well as IBM data entry machines, and she claimed that the keyboards caused her bilateral carpal tunnel syndrome (CTS). Schneck sought to recover damages for personal injuries. It was the 19th computer-related repetitive

stress injury case that has been decided in favor of equipment manufacturers, excluding statutes of limitations decisions and partial summary judgments.

SNMP TEST SUITE WITH WINDOWS NT AND 95 SUPPORT

InterWorking Labs announced the release of its new SNMP Test Suite, Revision 4.0, an expanded suite of tests to verify compliance with SNMPv2c, the recently revised Simple Network Management Protocol community standard. Included in SNMP Test Suite, Revision 4.0 are 90 new SNMPv2c compliance tests and 70 new tests for MIB II compliance, as well as new tests to check SNMP compliance for proprietary MIBs. In addition, the test suite now supports both Windows 95 and Windows NT.

In addition, Test Suite "remembers" completed tests and picks up where they left off, while providing support for private MIBs and criteria-based facilities for saving test results based on

any grouping of tests. The SNMP Test Suite, Revision 4.0 has a revised SNMP engine written in C++ that interfaces with test case scripts written in Tcl.

InterWorking Labs SNMP Test Suite, Revision 4.0 is available for a licensing fee of \$4,500 for the basic test suite. A demonstration version of the SNMP Test Suite for Windows 95 is available on the Internet at www.iwl.com.


HP STILL TARGETS IBM


HP introduced the next generation in its family of SNA interconnectivity solutions.


HP-UX SNAplus2 products are available now. The HP-UX SNAplus2 portfolio starts at \$3,550 for Tier 1 systems. Standalone SNAplus2 starting prices are as follows: HP-UX SNAplus2 Link, \$500; HP-UX SNAplus2 APPN EN, \$600; HP-UX SNAplus2 3270/3179G, \$850; HP-UX SNAplus2 API, \$300; and HP-UX SNAplus2 RJE, \$1,300.

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CIRCLE 258 ON READER CARD

These networking products enable users to link HP 9000 commercial computing environments with large production systems from IBM.

HP offers a package of financial incentives, hardware upgrade paths, migration tools and professional service assistance. The latest release of HP's HP-UX SNAplus2 features five solutions that enhance system scalability and application availability in data-warehousing and mainframe-migration environments. They include: HP-UX SNAplus2 Link; HP-UX SNAplus2 3270/3179G; HP-UX SNAplus2 APPN End Node; HP-UX SNAplus2 API — this allows a variety of Application Programming Interfaces (APIs) to enable application communications; and HP-UX SNAplus2 Remote Job Entry.

HP also announced it has completed interoperability testing with Cisco Systems' Channel Interface Processor (CIP) a high-performance data-center product that supports ESCON and bus/tag connectivity (see next story).

HP LEADS A WAGON DOWN THE CISCO TRAIL

In an effort to "enhance computer availability, response time and scalability requirements on IBM or IBM-compatible mainframes," HP will integrate Cisco Systems' Channel Interface Processor (CIP) into HP's SNA solutions portfolio. HP is the first non-mainframe computer manufacturer to integrate Cisco Systems' CIP into its data center offerings. "In IBM environments, customers reduce cost-of-ownership by consolidating multiple SNA and non-SNA networks into one multiprotocol internetwork," said Mark Hudson, director of network marketing for HP's General Systems Division.

By incorporating the Cisco 7000 family of router-based CIP and advanced peer-to-peer networking, HP believes its customers could achieve a significant up-front cost savings, better-managed TCP/IP and NetWare network traffic as a result of the following:

- high-performing SNA and TCP/IP networking capabilities
- elimination of multiple dedicated mainframe channel controllers
- support for IBM parallel channel (bus and tag) and ESCON technologies

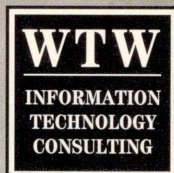
BUT WHAT'S THE SECRET HANDSHAKE?

The Data Warehousing Institute and Deloitte & Touche Consulting Group formed the Terabyte Club, which recognizes the select group of companies and government agencies that are using data warehouses with at least 1 terabyte of content.

Organizations that have successfully implemented a terabyte size data warehouse, as well as the suppliers and consultants who were instrumental in creating and managing these terabyte sized data warehouses, can send nominations via e-mail to terabyte@dtus.com and send a copy to tdwi@aol.com.

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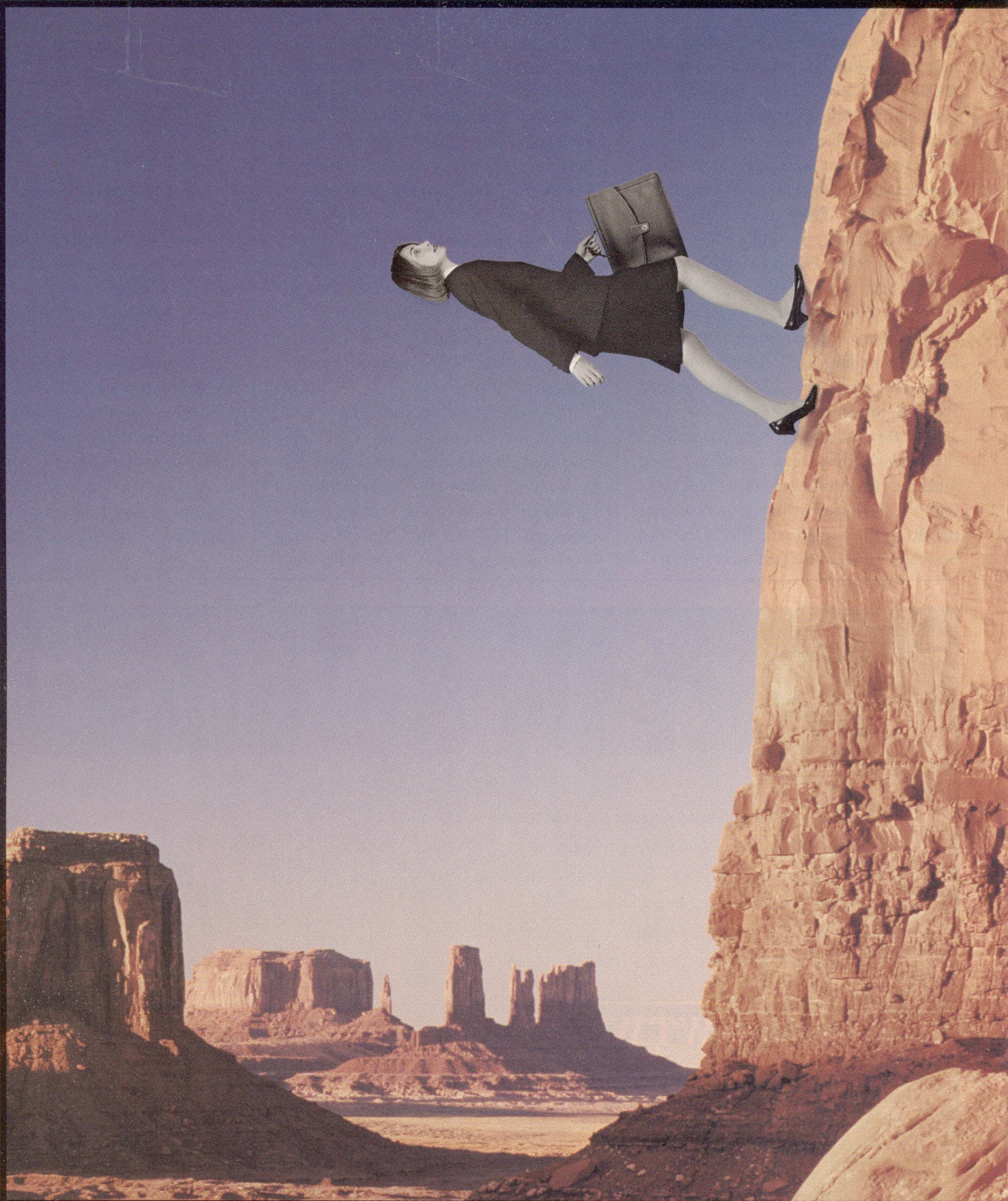
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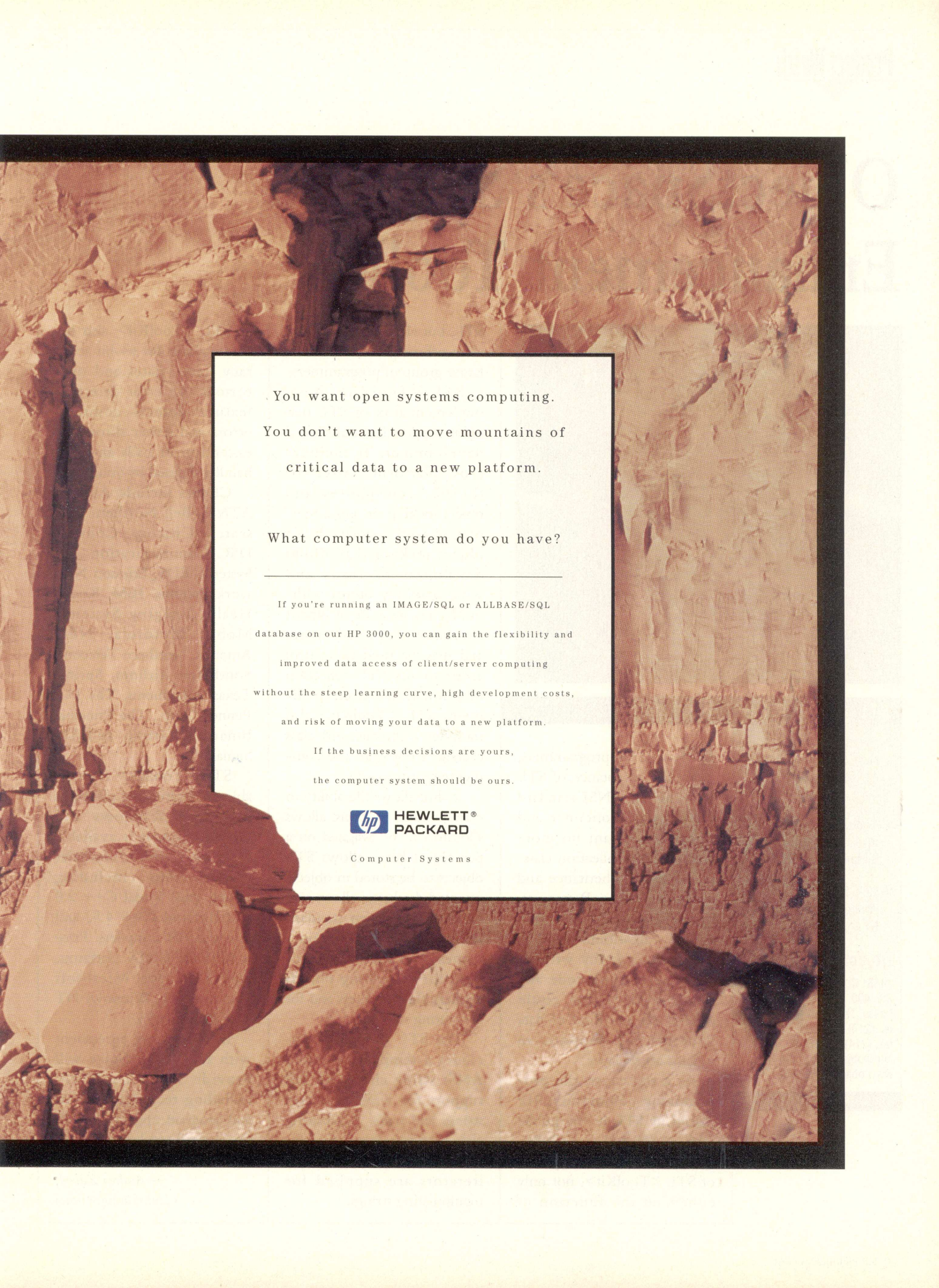
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CIRCLE 201 ON READER CARD





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You don't want to move mountains of
critical data to a new platform.

What computer system do you have?

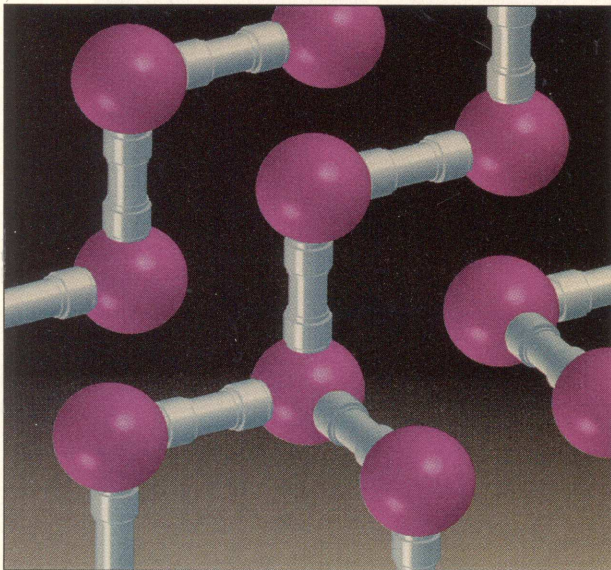
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Computer Systems

ObjectSpace's Standard Enhancement ToolKit



STL <TOOLKIT>

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CIRCLE 351 ON READER CARD

For C++ programmers, the acceptance of STL as the ANSI standard for template container and algorithms meant no more incompatible collection classes, no more inheritance and virtual functions. Better yet, having a standard did mean that new algorithms could be added individually without affecting existing code and that the algorithm could operate on any kind of data structure that supports an iterator access layer.

As a service to the programming community, HP placed its STL in the public domain. ObjectSpace (Dallas, Texas), with its development of STL <ToolKit>, not only enhanced the function of

STL, but also makes its C++ class offering available to a larger group of programmers.

STL <ToolKit> is an implementation of STL that offers support for multithread development. It includes cross-platform classes for threads, semaphores and object locking. It uses a template-based approach to object locking that allows developers to read- and write-lock any object without having to write or inherit from any additional classes and may be used to control access to any STL collection in a multithread environment. STL <ToolKit> also includes a tutorial and class catalog, a test suite and commented source code.

It also: allows the ability to store pointers to items; allows allocators to be assigned on a per-object basis; allows STL objects to be stored in object-oriented databases; allows you to switch between standard and non-standard container names; and includes functions for comparing objects through their pointers and for comparing strings.

The STL <ToolKit> includes a template-oriented ANSI string class with full support for wide character strings and traits. A substring class allows portions of strings to be accessed and STL style iterators are supplied for manipulating strings.

STL <ToolKit> also includes classes for 64-bit accuracy times, dates and time periods. An error detection feature detects common errors and either throws an exception or calls an error handler defined by you.

Clients include Alcatel, AT&T, Bell Northern Research, Citicorp, Convex, DSC Communications, E-Systems, EDS, Ericsson Network Systems, IBM, Kodak Health Imaging Systems, Mobil, Motorola, NEC America, Northern Telecom, Southwest Airlines, Sprint, Texas Instruments, The J.C. Penney Corp., The Principal Financial Group and US Signal.

STL <ToolKit> is available on a variety of platforms including Windows and UNIX. And, it is available for most platform/compiler combinations including cfront, gnu, Visual C++ 2.0 and Borland C++ 4.5, and Sun and HP compilers. Price is \$295 for UNIX platforms, and \$175 for Microsoft Windows 3.1, Windows NT and Windows 95.

In a licensing agreement with HP, ObjectSpace will provide STL <ToolKit>, including technical support and program upgrade, to HP for internal product development and testing.

—Andrea Zavod,
Contributing Author

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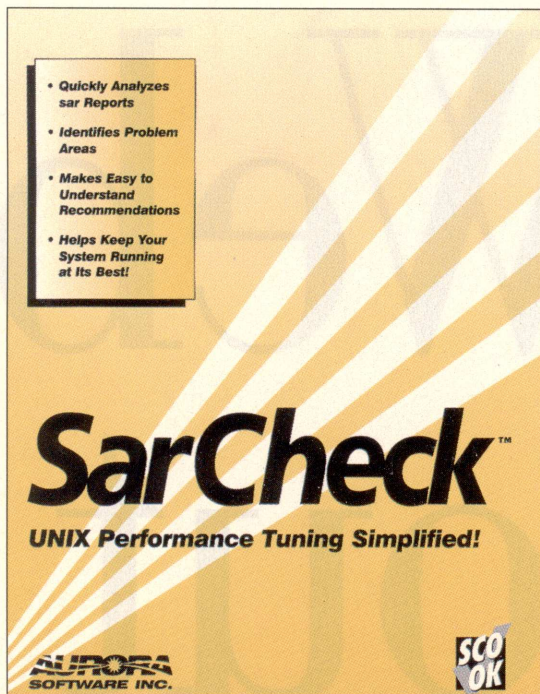
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CIRCLE 149 ON READER CARD

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the command line or a menu-driven front end script. It analyzes the UNIX system for possible performance bottlenecks and tells you how to correct them. The following conditions can be identified: CPU bottleneck detection; I/O bottleneck detection; detection of improper I/O load balancing; detection of unusually slow disk devices; memory bottleneck detection; inefficient system buffer cache sizing; improper system table sizes; limited capacity for an increase in workload or users; "impossible" data, such as negative CPU utilization; and inefficient PATH variables.

For identification purposes, the beginning of the analysis contains the name of the sar report file, the date, time, number of intervals, number of processors seen, amount of memory and system name. Next, the summary section highlights any CPU, I/O or memory bottlenecks that were seen, and indicates if cache or table sizes need to be changed. The report will also note if no bottlenecks were found. The recommendations are based solely on the data contained in the sar file and the values of various tunable

parameters, and should be taken in context. For example, if SarCheck analyzes data from Saturday, and that data is dedicated to batch jobs, implementing the recommendations will improve performance on Saturdays, but may hurt it during the week. Gradual changes are often suggested to prevent any unanticipated side effects of a major change.

The resource analysis section translates the data contained in the sar report into English. Much of the data is provided for reference, and explanations are given where appropriate. This section notes the times when key resources are most heavily used, and lists peak usage statistics. The capacity planning section can be used to approximate the amount of capacity left on the system. CPU, memory, disk and system table use statistics are examined to determine which resource is likely to become exhausted first.

SarCheck is available for HP-UX, SCO UNIX 3.2v4.x and OpenServer Release 5. A single license for SarCheck for HP-UX begins at \$600.

—Deborah Schwartz,
Associate Editor

SARCHECK

- Can run from the command line or a menu-driven front end script
- Available for HP-UX, SCO UNIX 3.2v4.x and OpenServer Release 5.
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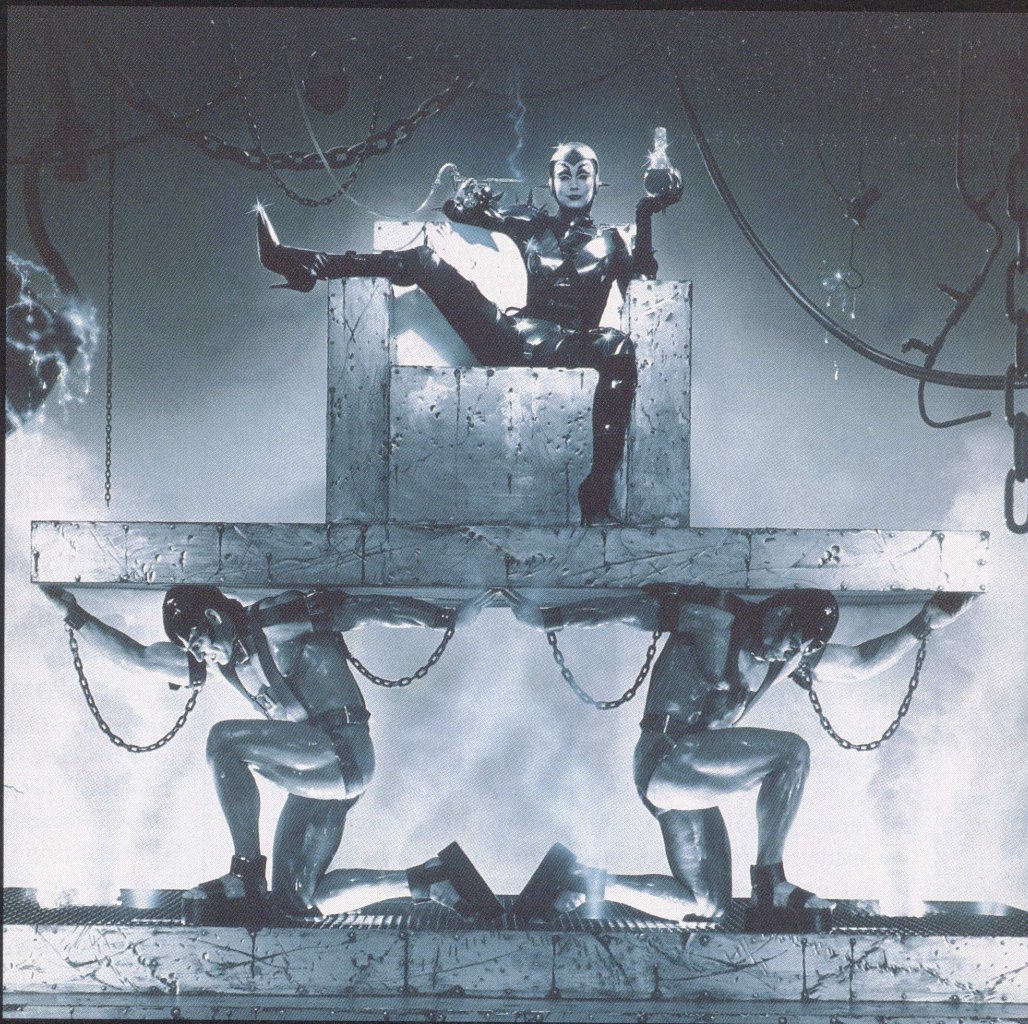
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CIRCLE 353 ON READER CARD

Administrators of HP-UX systems know that a sar (system activity reporter) report can prove to be invaluable when gathering information about system activities. Most performance tools are actually resource utilization monitors that provide statistics in a variety of numeric and graphical formats. However, they often leave most of the analysis and interpretation up to the user. Instead of just re-reporting system data and statistics, Aurora Software's (Plaistow, N.H.) SarCheck analyzes sar report information, and examines the system's tunable parameters and their interaction with each other. Then, in a concise, plain English report, it identifies problem areas and makes recommendations about how to correct them.

SarCheck can be run from

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CIRCLE 218 ON READER CARD

Document Management On The Go

Uniplex Software Provides Collaborative Workgroup Computing With onGO DMS And HP OpenMail

"In 1989, we made the right decision to get on the client-server bandwagon, which then was new. We chose HP's OpenMail as our messaging backbone because it was based on open standards."

Mike Hayes
Marketing Director
Uniplex Software Inc.

Uniplex Software Inc.

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CIRCLE 352 ON READER CARD

Uniplex Software (San Mateo, Calif.), source of the new onGO DMS document management system, qualifies as an old UNIX hand. Founded in Britain in 1981, Uniplex introduced office automation applications — calendaring, scheduling and messaging — to the UNIX environment with its Uniplex Business Software (UBS).

Riding the wave of UNIX growth during the '80s, Uniplex has ported UBS (now in Version 8.1) to every major UNIX variant and boasts a worldwide end-user base of 2 million seats.

According to Mike Hayes, Uniplex marketing director, a key change in product strategy came in 1989 when Uniplex decided that developing another office application suite for the desktop might no longer be a sure bet for future growth. "In 1989, we made the right decision to get on the client-server bandwagon, which then was very new," Hayes says.

The first result was onGO Office, announced five years ago. A collaborative workgroup product providing directory services, calendaring and task management for a distributed client-server computing environment, onGO Office runs on top of

HP's OpenMail enterprise messaging system.

"We find that as people distribute messaging systems through the organization, they are looking for other services they can use to compliment that messaging backbone," Hayes says. "Those services are calendaring, scheduling and added-value directory capabilities."

onGO DMS, a major component of Uniplex's onGO Office strategy, was announced in March 1996. onGO DMS takes a lifecycle approach to document management, providing management, control and functionality from document creation through document archiving, treating a document as a dynamic resource that will undergo numerous revisions.

Document indices are stored on a central UNIX server. Documents can be stored in any server distributed across a network, thus minimizing network traffic and allowing local rules for backup and security. The central index is linked to each local document server providing centralized access.

According to Hayes, "We chose HP's OpenMail as our messaging backbone because it was based on open standards, built on the client-server architecture, and is the only product that delivers

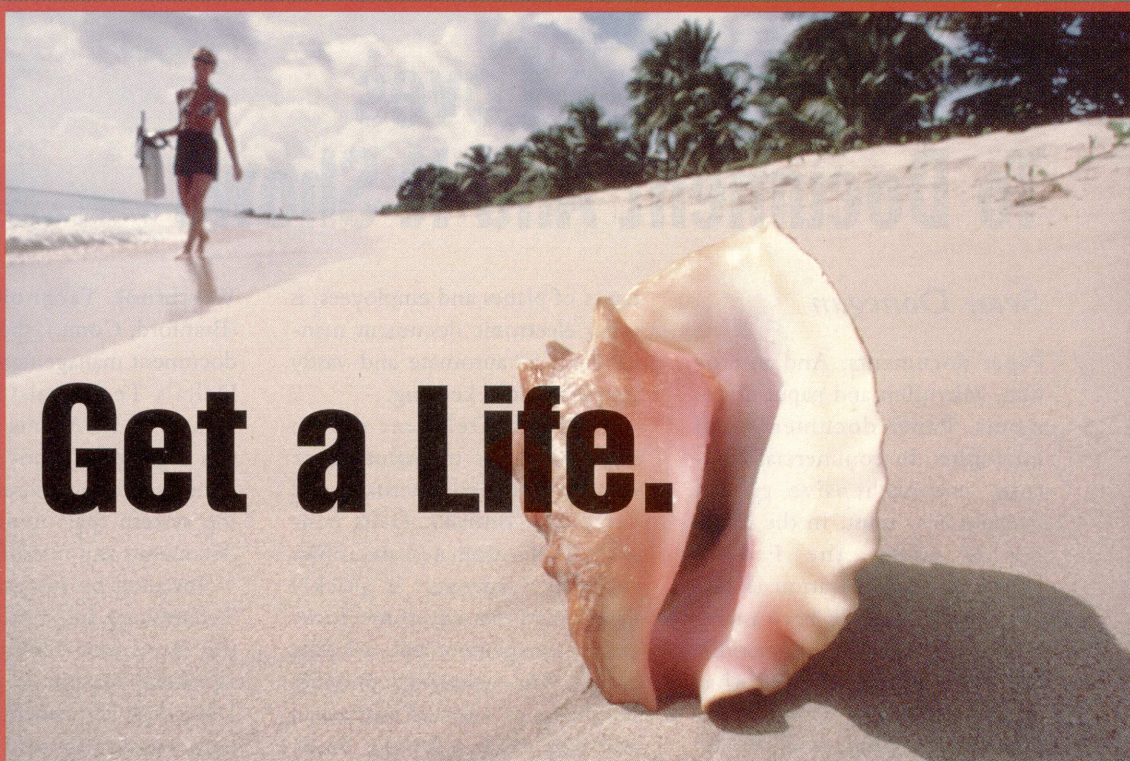
significant post-installation scalability to offer a relatively cost-effective way of managing a corporate messaging environment."

It may be purely coincidental, but Hayes notes that both onGO DMS and OpenMail were originally developed at facilities only a few miles apart in the United Kingdom. "Maybe it was luck. If OpenMail had been developed in the U.S., we might have built on something else," he says. "But OpenMail is a very strong offering — demonstrated by the success HP has had with it — and it seemed right for us to build on that."

In April 1996, Uniplex announced a strategic alliance with HP for joint marketing of onGO DMS in Korea, where onGO DMS will be sold by HP, bundled with the OpenMail product suite and sold separately.

"In Europe and the Far East, we've had a fantastic relationship with HP," Hayes says. "Now we're working with HP to develop relationships at the sales and marketing level in the U.S. We're focusing on the existing OpenMail sites as a key opportunity for us."

—Sam Dickey,
Contributing Author



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CIRCLE 108 ON READER CARD

Delta Air Lines Loves To Document And It Shows

Sean Donegan

Paper documents. And microfilm. Microfilm and paper documents. Paper documents and microfilm. In commercial aviation, comprehensive record keeping is a must. In the interest of safety, the Federal Aviation Administration (FAA) requires that airlines keep maintenance records for the service life of the aircraft and that records are readily accessible for FAA review. Thus, when an aircraft is sold, the records compiled by the seller and any prior owners must be provided to the buyer. So, Delta Air Lines, the world's third largest carrier in

terms of planes and employees, is using electronic document management to automate and vastly simplify record keeping.

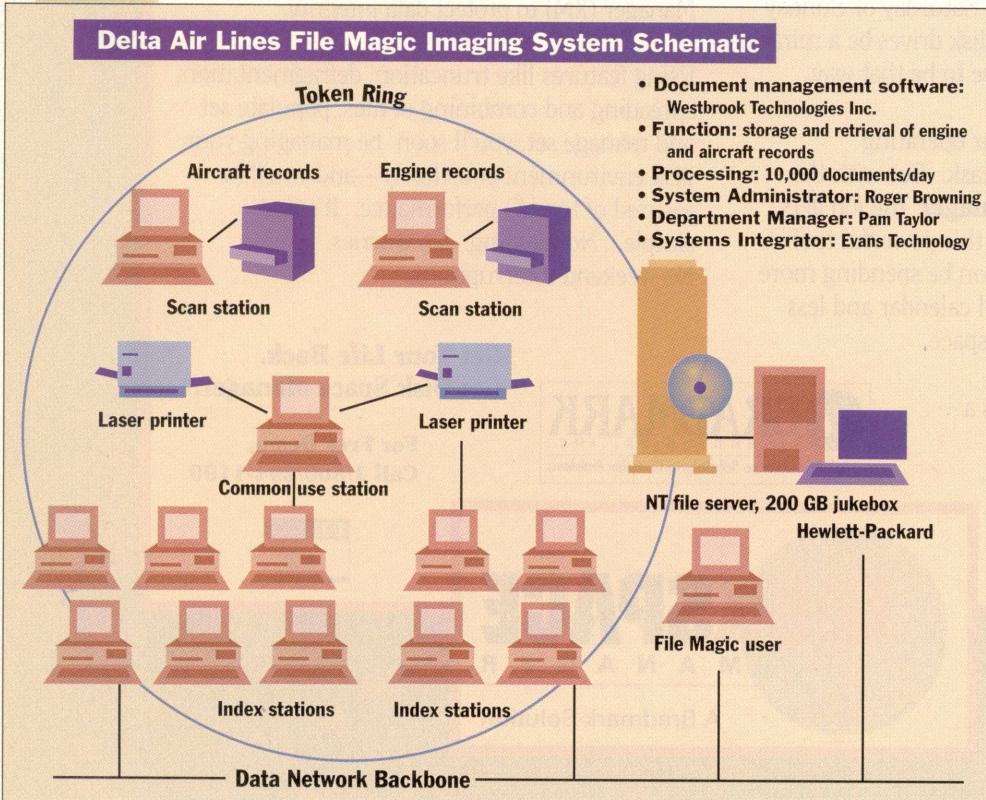
In 1994, Delta set out to improve access to maintenance information both internally and externally. Initially, Delta considered an automated microfilm solution. However, it quickly determined that electronic document management was a better choice. The technology provides simultaneous access if more than one user needs a specific document. By March 1995, Delta became an electronic document management user. Based on the File Magic! Plus document management software suite from

Westbrook Technologies Inc. (Branford, Conn.), the electronic document management system at Delta's Technical Operations Center in its Atlanta headquarters replaced a time- and labor-intensive traditional record keeping system that involved paper documents and microfilm.

Installed by integrator Evans Technology Inc. (Atlanta, Ga.), the electronic document management system is providing Delta with key benefits including paper reduction and enhanced employee productivity. Working closely with Roger Browning, Delta's supervisor of Engine Records/Imaging System administrator, Evans Technology constructed a solution that was put through a successful six-month pilot project. Evans Technology selected File Magic! Plus because it met Delta's requirements, which included being able to run under Windows NT Advanced Server and TCP/IP, handling batch processing of thousands of documents a day.

Due to the complexity of today's commercial aircraft and the constant attention necessary to keep them in peak flight condition, the maintenance information generated from each is massive. Imagine, then, the amount generated by 538 aircraft in Delta's fleet. Volumes of paper maintenance records from around the world are sent to Delta's Technical Operations Center. It is the only site that manages technical records, which are routed to two organi-

Delta Air Lines File Magic Imaging System Schematic



zations — Aircraft Records and Engine Records. Today, Delta's electronic document management system serves a total of 20 workstations in Aircraft and Engine Records, which are located in different areas of Delta's sprawling headquarters. Eighteen workstations are used during regular business hours by records employees, whose responsibilities include scanning documents into the system.

KEEP THOSE LOGS ROLLING

The documents received by Aircraft Records fall into three categories: aircraft logs, cabin discrepancy logs and aircraft maintenance repair logs. Aircraft logs are filled out whenever a pilot or mechanic detects a problem in the aircraft. Cabin discrepancy logs are filled out primarily by flight attendants and cover things such as faulty restroom latches. Aircraft maintenance repair logs are filled out for routine and non-routine maintenance. Engine Records receives documentation on any repair to an engine. Information is kept for each individual engine.

Prior to the electronic document management system, Aircraft Records stored aircraft logs and cabin discrepancy logs in 3-inch binders. Each binder contained the current month's sheets and those from the two previous months. Each month, the binder was updated, with the current month's information being added and the last month's information being removed and captured on microfilm. Aircraft maintenance repair logs were stored in filing cabinets, with new information being added each month and the oldest information being captured periodically on microfilm. Usually, several years elapse between major work on an engine. Thus, prior to the electronic document management system, Engine Records kept the latest documents on file. Once a major repair was completed, the old documents were captured on microfilm and the new original was inserted in the filing cabinet.

Exact digital duplicates of more than 4 million documents of maintenance

performed on aircraft, engines, landing gear, etc. are stored on a HP 200T optical jukebox. Documents can be retrieved in seconds by users of networked workstations on which electronic document management is an application. New documents are scanned into the optical jukebox at a rate of 10,000 a day. More importantly, because critical information resides on the optical jukebox, lost or misplaced documents are no longer an issue. The 200 GB HP 200T jukebox similarly met Delta's requirements for perfor-



mance and reliability. It uses WORM (Write Once Read Many) media and has 144 cartridges and four optical drives.

STREAMLINED FOR SPEED

The electronic document management system has streamlined document storage and retrieval. Before, Aircraft Records hand-sorted aircraft repair, cabin discrepancy and aircraft maintenance repair logs by three criteria: aircraft fleet type (such as Boeing 767), specific aircraft and the serial number on the log sheet. Now, incoming documents can be filed electronically after being scanned into the system. In terms of retrieval, what used to take minutes for both Aircraft and Engine Records personnel now takes seconds. Before, an employee would have to walk to filing cabinets to search for information. On average, retrieval time was five minutes if the information was on paper, and 10 to 20 minutes if it was on microfilm. Now, a document can be retrieved in an average of 10 seconds. The electronic document management system also provides easy

access to all documents pertaining to a specific aircraft. Under the old system, different types of documents — for example aircraft and cabin discrepancy logs — were stored in different cabinets.

In both Aircraft and Engine Records, one workstation has been designated "common use." It can be used by individuals with proper clearance around the clock. Delta employees, such as mechanics, maintenance planners, and engineering and quality assurance personnel, use the "common use" workstations. They also are used by FAA representatives. Now, documents ranging in size from 3- x 7-inch (cards) to 8.5- x 11-inch (paper) are entered into the system on Fujitsu scanners, which handle up to 100 pages per minute. Other components of the electronic document management system include a 133 MHz Dual Pentium AT&T server running Windows NT, 90 MHz Pentium AT&T workstations running Windows, the HP optical jukebox and Westbrook's File Magic! Plus. Electronic document management is available on a separate LAN, which provides an online link between Aircraft and Engine Records.

To date, the 4 million documents on the electronic document management system are contained in 42 cartridges. At the current 10,000-documents-a-day input rate, the 102 remaining cartridges won't be filled until 1998. Then, Delta, with Evans Technology's help, will assess the need for online versus near-line storage. The system's success has Delta thinking about continuing to roll out electronic document management, first to other departments in the headquarters via the main LAN. The next steps would be to provide the application via Delta's worldwide network to other domestic maintenance facilities, and then to international maintenance facilities.

—Sean Donegan is president of Westbrook Technologies Inc. (Branford, Conn.).

Special Orders Don't Upset Home Depot Sales Reps

George A. Thompson

Special orders don't upset the service personnel at Home Depot. When Home Depot shoppers are looking to order customized items like lumber, window treatments or storm doors, information about the order is entered in an online form by service representatives.

"We were rewriting our store application environment and we needed a toolset to help us accomplish two things: a quick implementation of forms, reports and bar codes for in-store applications, and something that would allow us to easily migrate our applications for different [spoken] languages," says Mike Anderson, Home Depot's director of application development.

PREFORM

Prior to the forms-based solution, which was implemented two years ago, the information for special order requests was filled out by store representatives on pre-printed forms. That information, actually contained on seven different forms, was then later entered into another computer system for tracking.

After working on an HP-UX platform for the past four years, Anderson chose the UNIX-oriented FormsXpress 1.2 (formerly known as ReForm) from Xpoint Corp. (Norcross, Ga.). XPoint Corp. develops electronic forms, barcoding and laser check software for UNIX-based manufacturing companies. He had also evaluated similar solutions from

JetForm (Ottawa, Canada) and Delrina (Cupertino, Calif.). "FormsXpress was a better fit for what we were trying to do," says Anderson. "And we were able to put our pilot in production a lot quicker [than the other alternatives]."

FORMALIZING A PROCESS

The FormsXpress software is located on either an HP 9000 G30 or G50 located in each of Home Depot's 430 home supply superstores across the United

States. After completing the on-screen form, a copy with all the entered data is then merged by the FormsXpress application and printed on an HP LaserJet 5 for distribution to the customer. The data about the special order item is then autofaxed from the HP system, or the InStore Processor (ISP) as they are called, to one of Home Depot's suppliers and eventually drop shipped to the customer's specified address or back to the store.



States. Up to 28 service reps can log on via an HP 760 terminal to call up the special order form for input.

FormsXpress is available in English, French, German and Spanish. FormsXpress supports over 25 internationally recognized barcode styles, including UCC, UCC-128, UPC and PostNet Plus 4. The software supports laser and thermal printers including HP, IBM, Lexmark, Xerox, Monarch,

With a FormsXpress solution, Home Depot's Special Order Center is now better able to process items that the store doesn't readily stock.

Although the turn around time varies by the particular supplier, because the form itself is much more legible than a handwritten one, many time consuming mistakes have been eliminated. Anderson confirms that the reliability of orders being placed to the vendors has improved, as

"The key advantage was being able to put the form online to show it to our users, what it would look and feel like and use it to capture information that we reuse in our production environment."

well as the customers who "understand exactly what they are getting from Home Depot."

Brian Monk, Home Depot's team leader for UNIX architecture applications, says working with FormsXpress didn't require a lot of extra code writing. "Unlike JetForm, which required that we go into our Informix database and add a lot of additional code, we were able to leave our applications alone and just produce the data from our applications. The Xpoint product took over from there. For example, with the FormsXpress Spool Data Mapping feature, Monks was able to reformat the forms layout, modify font style and size, and delete or alter data from one page to the next.

That meant less time and money for Home Depot. "It was easy to take our existing applications and marry it up with FormsXpress." After the evaluation period, "it took three months to get going," recalls Monks. Before the FormsXpress solution was in place, Anderson's staff was designing the report either on paper or in a word processor. "We would review it with

our users, fix it and eventually write the code. About 90 percent of the code that you write for reports and forms deals with formatting; only 10 percent of the code is for data retrieval. In fact, the only code we had to write was the data retrieval code."

A FORMULA FOR IMPROVING CUSTOMER SERVICE

Just reducing the cost [manufacturing and warehousing] of the preprinted forms for the special order requests saved quite a bit of money, according to Anderson. "The key advantage," he says, "was being able to put the form online to show it to our users, what it would look and feel like and use it to capture information that we reuse in our production environment." Although it's not a client-server application, because the data and the form are merged right on the ISP, when the [TCP/IP-based] network does go down between a store and the home office, which is linked together via frame relay WAN, "you can still rock and roll," says Anderson.

More importantly, the FormsXpress solution is a competitive advantage for Home Depot. "The customer is served because the form has more information

than before and everyone [customers, suppliers and employees] sees the same information. And the reliability of the order being placed to the suppliers has improved," says Anderson. The benefits are also measurable: Monks was looking for the special order forms to be printed within two minutes. FormsXpress printed the forms in less than 30 seconds.

Flushed with the initial success of the Xpoint solution, Anderson expects to use FormsXpress "on the other HP servers in-house to streamline our internal reporting process.

"We can react to business changes very quickly and provide more information to our store managers than they need. My long term goal is to create every UNIX-based form or report with FormsXpress."

Contact Xpoint Corp. at (770) 446-2764, fax: (770) 446-6129 or visit their Web site at www.xpoint-tech.com.

—George A. Thompson,
Senior Editor

The image shows two printed forms from Home Depot's Special Services Customer Agreement. The left form is for a customer named BUCHANAN, LORRETTA, and the right form is for a customer named BUCHANAN, LORRETTA. Both forms contain detailed information about the customer, the order, and the delivery terms. The forms are printed on a single sheet of paper, with the left form being the front side and the right form being the back side. The forms are printed in a standard, legible font, and the layout is clean and professional. The forms are titled 'SPECIAL SERVICES CUSTOMER AGREEMENT' and include sections for 'CUSTOMER INFORMATION', 'ORDER INFORMATION', 'DELIVERY INFORMATION', and 'TERMS AND CONDITIONS'. The forms are also numbered 'No. 59' in the bottom left corner.

Home Depot's Special Order Form printed on an HP LaserJet using FormsXpress. The ability to "shrink and fit" data maximizes the space used.



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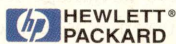
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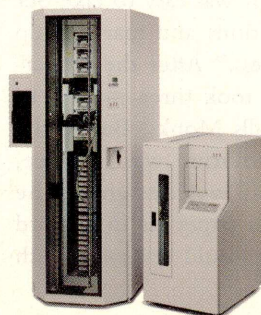
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CIRCLE 241 ON READER CARD



Sales Force AUTOMATION

Hard-Selling The Technology-Assisted Sale

By Jon William Toigo

Sales force automation. If you're involved in sales, you're already cringing. And for good reason. "Most sales force automation packages are set up to provide information to headquarters — more reports and status information that the salesperson needs to spend time inputting," according to Brian Dearing, president and CEO of ARI Network Services Inc. (Milwaukee, Wis.). "Telling sales people that an application will increase their productivity by generating better sales reports just won't sell. To them, the company should automate to increase sales, not to satisfy some imagined need for better reporting. Most tools aren't providing anything to improve the salesperson's job."

Dearing's views are echoed by many vendors of products in the sales force automation field. When interviewed, each product marketing manager points out that their tool is built with the salesperson in mind. However, most are quick to caveat their comments with the observation that, while corporate management agrees that the needs of the sales force are important, they

are also driven to integrate sales activity into a unified management information structure. Sales and marketing activities need to integrate with other business-critical functions to improve overall corporate efficiency and profitability.

In acknowledgment of these two sets of requirements — the needs of the mobile sales force for better sales tools and the needs of management for better reporting and integration — sales force automation applications are evolving.

WHAT IS SALES FORCE AUTOMATION?

Since its inception, sales force automation has been a confusing term. To some, it was synonymous with contact managers — PC-based applications used to collect data on customer leads

and to maintain records of customer visits, phone calls and correspondence. John Ferrara, executive vice president for sales and automation at GoldMine Software (Pacific Palisades, Calif.), a vendor of contact management software, observes that the functionality of contact managers is becoming more sophisticated.

"Contact managers are about six years old. They started as electronic versions of day timers with additional calendar and e-mail functions added over time. Now, we see contact management as information management," says Ferrara. "For example, GoldMine (GoldMine Software's contact management product) is a database of customer contact information that can be integrated on a workgroup or enterprise level to facilitate the delegation of activities among a sales team."

Says Ferrara, the latest generation of contact managers offer modifiable data structures and screen layouts plus the ability to interface to other applications through the Microsoft Windows desktop. The current version of GoldMine, he adds, will provide output through

Windows-based e-mail, fax and print products.

"GoldMine provides as much depth," argues Ferrara, "as opportunity management products." By opportunity management applications, he refers to the second category of sales force automation packages — those designed to integrate sales and marketing processes in a unified management platform.

An opportunity management system generally consists of a core database application that is used to store data on customer prospects, a marketing encyclopedia offering a content-searchable catalog of marketing literature and other information for review or communication to sales representatives or customers, and a sales and marketing process model that is used to interpret

field data and predict when, and for how much, sales may occur.

Some vendors field opportunity management systems on separate sales servers, while others write the packages to reside on existing legacy servers.

ARI's ARISE is one opportunity management product in a field that is increasingly growing in size. Products like ARISE differ from contact man-

MAKE OR BUY?

Discussions of sales force automation are often riddled with misleading nomenclature. This has led the Gartner Group, in a research note entitled *Technology-Enabled Selling: Beyond SFA*, to suggest a taxonomy for sorting applications that have been grouped haphazardly in the past into the sales force automation basket. According to the analysts, technology-enabled selling is a better concept than sales force automation and includes applications designed to support assisted and unassisted selling.

Assisted selling occurs outside the company facility (e.g., sales by salespeople in the field) and inside the company (e.g., telesales), and involves the interaction between salespeople and consumers. Unassisted selling includes sales via Web sites and kiosks at customer sites. Sales force automation, according to Gartner Group, is merely the providing of information technology to an outside sales force.

Whether this taxonomy contributes any clarity to companies interested in automating their sales and marketing efforts remains to be seen. One thing that does apply to most decisions about sales force automation is a make-or-buy analysis. In a typical acquisition process, companies first review the products available to assist them in managing or facilitating sales. In performing this review, they strive to determine whether the products can be wed to their existing sales process with minimal customization. If costly customization is required, another decision must be reached about the relative advantages of buying an off-the-shelf application and undertaking expensive customization or building a homegrown application from the ground up.

Some companies, such as Data Code Inc. (Orlando, Fla.), insist that their products offer comprehensive solutions to companies with minimal customization requirements. Michael Hill, vice president for application development at Data Code, indicates that his Enterprise Series information management system has been engineered specifically to prevent companies from having to reinvent the wheel. Rated among the top five sales force automation applications by the Sales and Marketing Industry Association, Hill says the Enterprise Series "is for organizations that need more than [a simple contact manager], but don't want the expense of building a total, ground floor up solution."

The Enterprise Series product operates on HP 9000s, as well as a number of other UNIX and Windows NT hosts. The product supports Oracle,

Informix and several other popular database standards and, in Hill's words, "can be integrated with project control systems, order entry and financial systems easily. The product is tailored through setups, not source code."

Robert Boyer, vice president of sales and marketing for Fastech (Broomall, Pa.), believes that the make or buy decision is "Baloney! It is like asking the question, 'Why buy a corporate accounting application, rather than building one from scratch?' It doesn't make any sense. There is something common to sales force automation requirements, and it is captured in the applications that are available today. Why build one from scratch?"

RE-INVENT THE SYSTEM

The answer that Marco Emrich might make is: Why not? Why spend money to customize a product to make it fit your company, when you can spend the same amount on building a product quickly that is tailored to your own needs and might provide a competitive advantage?

Emrich is senior director for advanced technology at Cincom Systems Inc. (Cincinnati, Ohio), whose flagship product, Total FrameWork, is less a sales force automation product than "an assembly environment for building customized cross-functional business applications rapidly."

Emrich argues that the true cost of sales force automation products is typically their integration with other applications. Using Total FrameWork, application development time can be reduced by "35 to 40 percent," says Emrich. "You don't need to know different languages."

For companies that don't want to step off into unknown territory, Emrich adds that Versatility Inc. (Fairfax, Va.), has already written the basic application for sales force automation under Total FrameWork. In fact, VerSatility SalesForce is actually seven products covering common sales force automation functions.

Of the seven applets or modules in the VerSatility series, five are exclusively for telesales and telemarketing, accounting for the adoption of the product by such telemarketing powerhouses as AT&T Cellular. The final two modules include an account management package and a developer's toolkit that can be useful in customizing the package.

Using VerSatility as an application suite, or as a template for developing other customized modules within the Total FrameWork environment, can

agers in terms of their functionality and cost.

Says Dearing, "These are full sales automation systems. They are used to coordinate the activities of entire sales forces. They are not only used to collect information and to generate form letters [like contact managers], but also to provide information about the field for better management of sales activi-

ty." The cost for an opportunity management system is part of what distinguishes it from a contact manager. Contact managers cost about \$100 to \$500 per seat. With full sales force automation systems, the price point differs dramatically: from \$500 to \$5,000 per seat.

The extent to which the opportunity management system needs to be cus-

tomized to meet a company's needs is an additional cost of ownership. According to Dearing, at the upper end, these systems require a high degree of customization and can typically be afforded only by larger organizations to facilitate the automation requirements of 50 or more sales and marketing end users, "Our customers are big companies and big dogs eat more. They want the sales force to be connected to existing legacy servers through a neutral interface."

Dearing says that customization requirements of sales force automation packages are a discriminator in the opportunity management segment of the sales force automation market, "About 600 companies play in this space. If you set up a continuum of products with contact managers on one end and complex systems with marketing encyclopedias on the other, ARISE would be about two-thirds of the way toward the complex system end."

Robert Boyer, vice president of sales and

marketing with Fastech (Broomall, Pa.), agrees that the ability to customize is a key discriminator in high-end sales management systems. However, he believes that a product's integral sales and marketing model can make or break its usefulness to the customer. "When dealing with larger companies, you need to consider the industry you are dealing with," maintains Boyer. For example, Fastech takes a vertical focus, providing a product, FastTrack, that fits with the way manufacturing companies operate.

"We know the sales and marketing processes of pharmaceutical and consumer goods manufacturers. They sell through organized channels using a pretty well-defined selling process. As a result, we provide packages with the technical problems of data synchronization and selling process modeling already solved. When the customer implements FastTrack, we become a mediator for customer add-ons into common features. We find that the initial implementation of the product is about 80 percent of what the customer requires. The other 20 percent is customized."

Fastech offers design and configuration consulting to customers who require it. FastTrack supports HP, Digital and IBM platforms and will be ported to Windows NT by year's end, according to Boyer. Fastech maintains a knowledge of its customer's sales requirements. This knowledge, Boyer asserts, is a result of Fastech's hands-on experience as an outsourcing service provider that numbers among its customers some of the largest consumer goods and pharmaceutical companies in the world.

However, not all companies with sales force automation requirements can meet their needs with a vertically-oriented product.

Peter D'Cruz, president of SmartSales (Toronto, Ontario), explains that his company's product grew out of internal needs, "We were in the business of making automated testing software. We had contact managers, but we needed to be able to take the data from those applications and use it to tell us where in the sales

provide an alternative to shrink-wrapped sales force automation software that better suits the way that a company does business. It may also provide an edge against competitors who are using cookie cutter applications to facilitate sales.

RE-INVENT THE MARKETING DEPARTMENT

Aside from the costs of customization, another reason to consider the build option in sales force automation is that the products themselves have come under fire. According to Dave Allman, vice president and general manager of the Learning Alliance, a recently acquired business unit of Interleaf Inc. (Waltham, Mass.), major companies are slowly becoming aware of the shortcomings of "the first wave of sales force automation products. These companies have invested millions of dollars in training, sales force automation and document management initiatives and haven't seen the payoff."

To meet the needs of these companies "for the support of business-to-business, complex sales involving many persons," Allman prescribes the Intellecte/Sales Team product from Interleaf, Interleaf's Intellecte/Web product, and extensive indoctrination and training in the Learning Alliance Methodology.

Allman traces the origins of the Learning Alliance Methodology to studies in which he participated examining skills requirements for corporate sales forces in the year 2000. He took "the best ideas from the studies and created a methodology that fuses a management consulting model with technology" — specifically Interleaf document management technology. The resultant product offering "consists of intensive classroom training, a product that runs on a laptop, a document management product, an intranet product and consulting advice." The result, says Allman, will be a total restructuring of the customer's sales process.

Should sales force automation efforts target a larger purpose of reinventing the sales and marketing approach of a company? Or, as the experience of HP demonstrates (see *The HP Experience*, page 28), should sales force automation aim only at providing tools — whether custom-developed or purchased off-the-shelf — to sales people inside or outside the corporate office to assist them in doing their job? In the words of a wise old-timer in the selling game: "You get a lot of promises from prospects in this business. You just have to throw them at the wall and see which ones stick."

—JWT

process we were, when we expected to close and at what price. This is difficult to do even in a small company. We couldn't find a product that matched our sales process, so we decided to build something ourselves."

D'Cruz recalls that the company used the Microsoft Access database to prototype the system. The company brainstormed the steps comprising the sales cycle and set it up in the database. Next, they added a price list and remote connectivity for dial-up access. In this way, status updates on sales efforts could be prepared locally, then transmitted to the database.

Says D'Cruz, "We were able to eliminate probabilities from our sales forecasting process using this tool and our historical data. We looked at the position of each sales effort in the sales cycle, compared it to historical percentages of closing sales at each stage, and were able to forecast our sales with high degrees of effectiveness."

D'Cruz says that the product was so successful internally, the company decided to offer it for sale in late 1995. It was quickly adopted by Digital Equipment of Canada (Hull, Quebec), where Alain Lalonde, network consultant, indicated, "It is helping us simplify a complex picture, plan and manage more effectively, and understand what is really happening in the field."

SmartSales, at \$149, is an upstart in the opportunity management field. D'Cruz reports that the product is being ported from the Access database to Microsoft SQL Server and will continue to support Windows platforms, including Windows NT. Questions about its scalability to larger enterprise environments are met with a smile by D'Cruz who sees the product's simplicity as a plus.

The SmartSales product has recently been enhanced to provide support for tracking and forecasting revenues from continuing lines of business. This feature, plus support for telemarketing sales, electronic commerce and the Internet, are being added to nearly every sales force automation product available today.

Vendors claim that the new features reflect the continuing evolution of cus-

*The extent to
which the
opportunity
management
system needs to
be customized
is an additional
cost of
ownership.*

tomers requirements. HP's experience illustrates how sales force automation requirements are evolving.

THE HP EXPERIENCE

Dick Knudtsen was promoted to sales force productivity manager for HP's Computer Sales Organization (CSO) in 1993. He had previously been involved with HP sales and marketing efforts, and recalls the company's first foray into sales force automation in 1988.

"We rolled out portable computers to our sales people with the objective of getting them on our company e-mail system and to encourage them to become more computer literate. We did accomplish these goals. About 90 percent of our sales force began using corporate e-mail and there was a marked increase in computer literacy. However, supporting this effort took resources and over time support dwindled as the company implemented cost-controls and went through a period of downsizing.

Knudtsen recalls, "In 1992, the sales organization was restructured around industry lines rather than geographical ones. I was commissioned to look at sales force automation products in 1993 and started by conducting focus groups and sending out surveys to see what the sales force needed and what they had. We found that many different

computers were being used — too many platforms to support effectively, and that there were other problems with the process as well. We recommended that a standard, supported PC platform and toolset be distributed to our sales force.

We also recommended that systems be developed to provide better access to marketing literature and competitor data and to assist with configuration and quotes. We made recommendations on administrative support, sales force training and order administration."

The recommendations were adopted in a big way, according to Knudtsen. A standardized platform was developed and distributed to all configuration team centers, and ultimately to the entire Americas sales force. The solution incorporated Internet/intranet technology as well as an internal operating environment that would facilitate automatic software distribution. Knudtsen reports, "after six months, we set up a flexible sales office program that provided support for our home offices."

With this infrastructure in place, in late 1994, HP began delivering specialized applications to the sales force. One package, dubbed the electronic sales partner (ESP), included the Netscape Communications Corp.'s Navigator browser, which facilitated access not only to the Web, but also to intranet Web sites within HP where product and competitor data could be obtained.

Another application, the Configuration Tool Set, was released to the sales force to facilitate the development of configurations and price quotes on a remote basis. Knudtsen reports that this client-server application has been so successful that the company is now looking at multimedia applications to address other sales force requests.

"Our results have been positive. Most sales force automation comes from the management perspective. We've departed from that approach and focused on what the rep needs. We've used our representatives as a sounding board for determining what would be done next."

Knudtsen sees the salesperson as an

information broker — with regard to selling products and in terms of defining sales force automation requirements. He reports that sales force automation decisions, to be successful, must consider the preferences of the salesperson.

"For example, we have been talking about going to a standard application for contact management software, but contact managers seem to be a personal thing with the sales rep. We tried an integrated system pilot with about 100 people. Performance was an issue. There was too much overhead. So, we went with a contact management approach, put back-end office products in place, and worked to make our sales solution highly interactive with Web browsers. This has been working well."

WEB-BASED SALES AND MARKETING ENCYCLOPEDIAS

As the case of HP demonstrates, the evolving requirements for sales force automation are making for interesting combinations between diverse technologies. For companies using the Web for electronic commerce and sales force communications, several new products have been developed to meet sales force automation requirements.

According to Bob Tate, vice president of marketing for The Vantive Corp. (Santa Clara, Calif.), the combination of sales force automation and Web technology has solved myriad architectural issues for the company's recently-announced Vantive Sales application, "From a technical standpoint, our entire suite of applications are all simply different views of common tables. From an architectural standpoint, however, our application is indifferent to the client operating system. You can access it from any client platform using a Web browser."

According to Tate, that means field personnel and channel sales partners can access sales information through the Internet or corporate intranet, "A key element of sales force automation is the marketing encyclopedia. Previously, a company had to distribute this to its sales people on hard disk or a

CD. Now, this huge chunk of data can be placed on the Web where customers, sales people and partners can use a Web browser to bring it down."

Like Vantive, Remedy Corp. (Mountain View, Calif.) has been less a player in sales force automation than in help desk and asset management applications, according to Mike Lough, director of corporate communications.

"We were not in sales force automation as a primary target market. We specialized in help desk applications. Our Action Request System (ARS) provided a secure effective way to track trouble reports to completion. It was adapted to provide support for defect tracking, quality assurance, and ultimately sales force automation," says Lough.

ARS consists of a client application that "supports almost all platforms and fully supports current Web browsers" and a system server that runs on a range of server platforms. The server application consists of a workflow engine and a database server that stores data in popular relational database or flat-file formats. To this core product, Remedy offers optional add-ons that include an Internet access product, ARWeb, and a visual metrics product, Flashboards, that facilitates the presentation of ARS data in an up-to-the-minute graphical format — all without additional programming.

Customers are coming back with new uses. In sales force automation, they are using the product to track sales leads from prospect to contract. They use ARS to track sales and orders. It is a self-help solution. You can query the database and find the status of an existing prospect. Data is HTML-formatted on-the-fly and can be used with Flashboards to provide charts and graphs.

It was bound to happen. Using the Internet and the Web as a vehicle for sales force automation is just the latest trend in a field inundated by vendors looking for a special discriminator that will launch their products to widespread use. Sales force automation is evolving and the scope of products included in this descriptor is widening to include every kind of contact man-

ager, data analysis tool, forms processor and multimedia presentation manager available. Vendor literature makes extraordinary claims of fabulous riches to be gained to companies who install their products.

Hype aside, if the HP experience teaches anything, it is that the success of any sales force automation effort rides on the opinions of the salespeople in the trenches and their perception of the contribution that these tools make to their sales success. When it comes to sales force automation, salespeople are the hardest sell of all.

—Jon William Toigo is an independent writer and consultant specializing in business automation solutions. He can be reached at jtoigo@intnet.net or www.intnet.net/public/dolphin.

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CIRCLE 293 ON READER CARD

A White Paper

Building Client-Server Applications On The HP 3000

By Rohan Hall

PART 1

SUBMITTED FOR YOUR APPROVAL

A manufacturing manager sits staring at his PC. At the meeting, which starts in 15 minutes, he has to make a presentation on the top five products. Data to report includes the total finished goods for each of the three plants; as well as orders past due, due within seven days and due within 30 days. During the past year, it was always a problem to gather this information because each plant had its own HP 3000 system running ASK MANMAN's manufacturing software in three different locations. It was a tedious task to import the files each plant sent him and then consolidate the data in his spreadsheet. This morning, however, he simply clicks a button on his PC. Within seconds, the data is retrieved from each site and a report is displayed on his screen. Another click and he can hear his LaserJet printer at work.

AN APPEALING NOTION

The idea of a client-server application is a very appealing one, especially to the new generation of Microsoft Windows "power users." These users are typically professionals and managers who have gotten used to the idea of

retrieving, manipulating and reporting data with a click of a button.

These knowledge-workers, who were once dependent on the IT group to provide data in the form of hard copy reports or downloaded extracted files, find the idea of a Graphical User Interface On-Line Transaction

Processing (GUI OLTP) application to be irresistible.

Imagine, the idea of directly accessing legacy HP 3000 data with the click of a button then manipulating and

displaying the data using tools you are already familiar with, and selectively importing this data directly into an Excel or Lotus spreadsheet. The conditions for the selection are user-defined at the time of the online request for data. These are some of the features with which client-server applications empower knowledge-workers.

The amount of data currently in print or being discussed about client-server technology is astonishing. What is more astonishing, however, is that there is almost no real information available that specifically addresses client-server development on HP 3000 systems. This article helps fill this gap of knowledge, and provides information to HP 3000 IT professionals regarding building such an application.

► What Is Client-Server?

In the HP 3000 environment, the server or host is the HP 3000 system. The client is most likely a PC.

The server's main responsibility is to store data and act as the manager of that data. The server determines who, when and how the data is accessed. The server typically has a program, generally called a data manager, which performs these functions.

The main responsibility of the client is to provide a user interface that facilitates the way data is requested from the server. This is usually done via some type of GUI front-end tool. Visual Basic, Powerbuilder, C++ and Gupta are just a small sample of some of the

tools that are used to write client applications. Once the client requests and retrieves the data from the server, it then may perform additional processing of this data. This data may then be stored on the client, reported to some output device, transferred to another application or resent to the server to update the current information or add new information.

Client-server technology is used to enhance many legacy systems as well as new systems. This technology removes platform and database dependencies

that were once prevalent in the industry. Implementations of this client-server technology include such systems as decision support, data warehousing, intranet and the Internet.

Decision support systems (DSS) are legacy systems that are used for the daily transaction processing of an organization. These systems are traditionally host-based systems with OLTP and batch processing capabilities. Client-server technology is used in these environments to allow connectivity between multiple systems and to facili-

CLIENT-SERVER TERMINOLOGY

- **Allbase** — A relational DBMS provided by HP.
- **API** — Application Programming Interface. The functions that are called from the DLL.
- **ARPA** — The government agency that developed TCP. Also used in reference to services provided that include TCP/IP.
- **Client-Server** — A scenario where two or more computers communicate with each other. The client requests a service, and the server services a request.
- **Daemon** — A son process that services a specific client's request.
- **Data Manager** — The program that actually manages the client's request.
- **Datamarts** — A data warehousing term that refers to smaller warehouses with specific pieces of data instead of one large warehouse of data.
- **Data Warehousing** — A client-server relationship where the server contains a repository of data. This data may have been extracted from various sources to this warehouse. The client has read only access to this warehouse and allows users to perform various types of searches against this warehouse.
- **DBMS** — Database Management System.
- **DLL** — Dynamic Linked Library. A library of routines that can be accessed to do various standard or non-standard tasks.
- **GPF** — General Protection Fault. An unpleasant thing that happens when a portion of memory is overwritten in a Windows environment typically during the retrieval of data. This can hang your application or entire system.
- **GUI** — Graphical User Interface. An environment where an application program is driven by events caused by graphical images. These events could be click, double click, drag etc.
- **Host Name** — That name that is used as an alias to an IP address. It is used to identify the host or server.
- **IMAGE** — A hierarchical/network database management system that is currently unique to the HP 3000 system. The name has migrated from IMAGE to TurboIMAGE, and now to IMAGE/SQL as it assumes the implied new capabilities.
- **Indexing** — A system of organizing linked data in order to facilitate the efficient retrieval of such data.
- **IP Address** — A specific address that identifies the location of a computer. It is similar in concept to a street address that identifies the specific location of a home.
- **Listener** — A program (usually executed in a batch job format) that waits for and assigns a client's request to a son process.
- **Metadata** — Data that describe the data in the warehouse.
- **Middleware** — Applications that are used to facilitate the communications or tasks between the client and server.
- **ODBC** — Open DataBase Connectivity. A standard provided by Microsoft to access databases. This solution provides access to different data structures without programming effort. This access, however, tends to be limited and not viable in many production environments.
- **OLTP** — On-Line Transaction Processing. The direct processing of data during a real-time environment as opposed to a batch environment.
- **OOP** — Object-Oriented Programming. The programming used in a GUI environment.
- **Ping** — A way used by the IP portion of TCP/IP to identify if a computer exists at the specified address. It is similar to the echo pinging concepts used by submarines to identify the location of objects.
- **RDBMS** — Relational Database Management System. A database system that uses relational concepts and structures.
- **SDK** — Software Development Kit. APIs are sometimes a part of software vendor's SDKs.
- **Sockets** — The method used by TCP to distribute tasks for each user in its environment.
- **TCP/IP** — A communication protocol that facilitates communication between computers.
- **VB** — Visual Basic. A popular and dynamic language offered by Microsoft using Basic as its core syntax. It is commonly used to develop Windows-based applications as well as client-server applications.

tate the processing of data between these operational systems. In this environment, distributed processing is now available, which shares the processing burden between the host and the client.

Data Warehousing (DW) is a popular implementation of the client-server technology where applications are designed to give better query access to enterprisewide data. These applications greatly benefit individuals who want to do corporatwide analysis in order to make strategic decisions. Unlike DSS systems, DW systems are designed to give read-only (query) access to historic data, instead of OLTP access to current data.

The Internet uses client-server technology to connect computers all over the world. These computers have very little in common except the technology which facilitates the connectivity and communication between each machine. The intranet, however, refers to an internal network of an organization's computer systems. Client-server

technology is also used throughout these networked systems. Therefore, where technology was once limited by the development platform and its components, client-server technology now

Speedware on MPE systems. In addition to that, there is a PC group or individual that maintains PC hardware and software, but has little knowledge of the HP 3000 machine. Often a net-

any of the concepts and terminologies between the HP 3000 world and the Windows world are different. "Image" and "query" mean completely different things to PC developers than HP 3000 developers.

removes these limitations to allow distributed processing, connectivity and better access to data.

► MPE And Client-Server Environments

MPE organizations typically have a separation of technical knowledge between individuals and groups. The majority of the staff usually consists of MPE-based programmers. These programmers have spent their entire career programming Cobol, Powerhouse or

work person is a part of the PC group.

In putting together a client-server project, it is important that the project manager is aware of this separation of knowledge. It is more important, however, that this manager understand the various components of the project as well as how to communicate the responsibilities of each task in a way that these contributing individuals understand. Many of the concepts and terminologies between the HP 3000

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world and the Windows world are different. Communications between the various team members can sometimes be difficult. For example, the term "dataset" has no meaning to someone in the Windows or relational database world. "Image" and "query" mean completely different things to PC developers than HP 3000 developers.

In addition to terms, the vast amount of software and middleware involved in the development of a client-server project can be overwhelming. The general concept of the client-server technology consists of the following three major parts: the server, the client and the communications between the client and server.

THE SERVER

The server's main responsibility is to store and manage the access of the data. This server is an HP 3000 system, using MPE/iX V5.0 or greater, with

TurboIMAGE (IMAGE) as the storehouse of the data.

The major components of the server are the database, the data manager and the listener. The combination of these items, along with the communication protocol, will facilitate interaction with the client. An assumption that is made is that the communication protocol will be via a TCP network. In Part II of this article, the section on Network and Communication will describe in detail the different methods of communication, as well as why TCP is the recommended way of linking a client with a server.

► The Database

The database is an IMAGE database. Even though other data structures can now be found on MPE operating systems, such as Allbase and Oracle, IMAGE is still the standard database on HP 3000 systems. There is typically no redesign or recreation of data structures in client-server development. Most

implementations use the existing data in its current form. Data Warehousing development is an exception to this rule.

IMAGE/SQL is sometimes confused with Allbase/SQL. Allbase and IMAGE are completely different kinds of databases. Allbase is a relational database while IMAGE is a network database. The only similarity is that they are both HP proprietary databases.

As a network database, IMAGE uses a hierarchical structure with built-in security and referential constraints. It uses a root file to keep track of its datasets, data items and file attributes. IMAGE is accessed via "DB calls" using different access modes.

Allbase is a relational database that uses relational concepts with DBA (Database Administrator)-assigned referential constraints and security. It uses a database environment (DBE) to keep track of its tables, columns and file attributes. Structured Query Language (SQL) is used to access this relational

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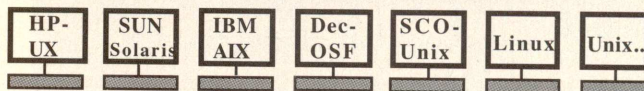
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database. Through its DBE, Allbase is capable of linking multiple files across multiple databases

These are only a few of the differences between IMAGE and Allbase. Confusion sometimes comes from the SQL part of the terminology in addition to new features that are now provided to IMAGE. Currently, HP has provided a utility called ATCutil that allows the attachment of IMAGE databases on an Allbase DBE. This does not convert an IMAGE database to a relational database, but it does give SQL capabilities to IMAGE databases, hence the term IMAGE/SQL.

SQL is the utility that is used to access relational databases. This tool is similar to HP's Query or Cognos' Quiz & Qtp. SQL has the capability to search (query) a database and return the data in a structured format. The main function of these "queries" is to select, join and project data. SQL also has the ability to add, update and delete information.

ISQL is the tool that is used to access Allbase or IMAGE using SQL calls. It is an interactive tool that allows the user to perform SQL calls as well as DBA-type functions. Currently many client based tools are only capable of providing access to data structures via SQL calls. Therefore, SQL access to IMAGE creates more options or possibilities for potential client tools.

► The Data Manager

The Data Manager (DM) is the program that interprets and submits the request sent by the client. The data access requirements of the project, such as server security, data access and performance, determine the design of the DM.

Some questions the DM answers will be: Who is allowed to get access to which database? What type of access does that individual or group have to a database? And how should we retrieve data? Upon completing its task, the DM returns the results to the waiting client.

► The Listener

Unlike the DM, the listener is a new element to most HP 3000 environ-

ments. This is a program that is typically executed in a batch job that runs indefinitely while waiting for connection attempts from the client. If a successful connection is made, it spawns a unique son process (daemon process), or session (depending on the implementation), on the HP 3000 for each client. This unique son process is generally referred to as a socket.

Each socket connection is equivalent to a unique logon to that HP 3000. If a son process is spawned, then the capabilities of that client are taken from the job that spawned the son process. Otherwise, if a logical session is spawned, then the capabilities of that client are taken from the logical session. All MPE constraints and capabilities are recognized by the client, unless programatically challenged by the data manager.

Socket connections are not the only way to access HP 3000 servers, but it is currently the standard. Socket connections are used with TCP/IP networks in most client-server situations as well as throughout the Internet.

Editor's Note: Part II of Building Client-Server Applications on the HP 3000, appearing next month, will cover the client, including hardware, programming languages and middleware, as well as networking and communications. Part III, scheduled for October, will focus on project issues such as performance, security and outsourcing.

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About the Author:

Rohan Hall is a software consultant and co-founder of Hall, Wynter and Associates. He has developed various legacy and client-server applications on HP 3000 MPE/iX, UNIX, VAX/VMS, Data General, Microsoft Windows and DOS systems. He has over 12 years of experience in various areas of systems development. He has worked with HP, Lockheed/Martin, Hughes Aircraft and Cognos Corp. Rohan Hall can be reached at: rhcon@aol.com, or (719) 532-9246; (303) 412-8651.

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Start Me Up — Part 2

OK, this is the moment you've been waiting for: it's the continuation of the discussion on the

Run Control files used in HP-UX 10. Excited? I know I am!

First, let's look at the actual contents of a Run Control script and the associated files. You can use this as an example, or template if you need to add to the system Run Control files to start or stop any server programs, or usage logging systems.

There will be only two files needed: **/sbin/init.d/license**

The Run Control script, written to the specifications listed in the **rc** man page. **/etc/rc.config.d/license**

The configuration file, used to set variables that control the execution of the Run Control script. In addition, there are the two links created into the **/sbin/rc[1-9].d** directories, as discussed last issue.

First, let's look in detail at the specifications for the Run Control script. The usage line for a Run Control script would look like this:

```
RC-script start|stop|start_msg|stop_msg
```

This shows that the scripts will always be called with an argument, and the argument tells the script what it is expected to do. An example of the command line that the **/sbin/rc** script would invoke when changing run levels (like during boot) might be:

```
/sbin/rc3.d/S2001cnse.srvr start
```

MAY I SEE YOUR LICENSE PLEASE

The license server script that we will be using as an example will need to start the license server when it is called with the argument of **start**, and shut the server program down when the argument is **stop**. The two message arguments are used by the **/sbin/rc** script to develop the checklist that is displayed on the screen when booting (on the "HP-UX Startup in progress" screen), or shutting down, more accurately, the list that is displayed when changing run levels. In this example, that message would be something like "Starting FLEXlm license server."

Here is the complete **/sbin/init.d/license** shell script:

Line 1 declares the shell that will execute the script—note that it is the **/sbin/sh** shell. Line 3 sets the **PATH** for any programs that this script invokes.

The case statement on lines 5 to 24 does all the work of the script. Note: the **rc** man page declares that there must be five argument cases handled by the script — the four already discussed, as well as returning a usage message, and failure status if called with no, or wrong, arguments. With version 10.10 there are some scripts shipped that do not deal with all five cases. One is the **hpnpd** script, and it only has a **start**, **stop** and **default** case (line 21). During boot up, when the script is called with the **start_msg** argument, it returns the **default** case, which is a usage message. This means that the usage message is displayed on the screen during boot. That is not proper behavior.

Another specification from the **rc**

```
line 1 #!/sbin/sh
line 2 # Startup and kill script for the license server
line 3 export PATH=/sbin:/usr/sbin:/usr/bin
line 4
line 5 case "$1" in
line 6 "start_msg")
line 7 echo "Starting FLEXlm License Server" ;;
line 8 "start")
line 9 if [ "$license" -ne 0
line 10 then
line 11 /opt/lmgrd/bin/lmgrd -c /opt/lmgrd/license.dat &
line 12 else exit 2
line 13 fi
line 14 exit 0 ;;
line 15 "stop_msg")
line 16 echo "Terminating FLEXlm License Server" ;;
line 17 "stop")
line 18 PID=`ps -e | awk '$4 == "lmgrd" {print $1}`
line 19 [ -z "$PID" ] && exit 2
line 20 kill "$PID";;
line 21 *)
line 22 echo "Usage: $0 {start|stop|start_msg|stop_msg}"
line 23 exit 1;;
line 24 esac
line 25 exit 0;
```


man page is that the scripts can return four (0 through 3) different kinds of status levels:

```
0 Successful
1 Failure
2 Print N/A in the checklist
3 Reboot after running
  (used for software
  customization scripts)
```

Line 5 of the script starts the case statement, using the command line argument (\$1) as the pattern to be tested against each of the cases from lines 6, 8, 15, 17 and 21. If the argument does not match (or does not exist) the first four cases, it will execute lines 21 through 23, and print a usage message, then exit with a failure (1) status. The two message returning cases, `start_msg` and `stop_msg` (lines 6 through 7 and 15 through 16), echo an appropriate string. The real work of the script is done in the **start** case (lines 8 through 14), and **stop** case (lines 17 through 20). The **start** case is used when transitioning to run level 3, when the `/sbin/rc` script invokes all scripts linked into the `/sbin/rc3.d` directory, with a name that starts with **S** (in this case, the name `S200lcnsr.svr` is a link to the **license** script). The **rc** script then executes all these scripts supplying an argument of **start**.

Therefore, on line 9, if the variable **license** is set to anything other than **0**, we start the server program with line 11 then exit with status **0** (line 14). If **license** is not set, we exit with a status of **2**, which causes the **N/A** string to be printed. In the **stop** case, we use some shell scripting (line 18) to set the variable **PID** to the process ID of the license server program, then kill that process (line 20) if it is running. If the process was not running, we exit with status **2**, to print **N/A** in the checklist (line 19).

A PLACE FOR EVERYTHING

That's the program, so next we would put all the files in the proper locations, with the **prtopar** modes and ownership so that they will be executed when needed. The script `/sbin/init.d/license` is the real script, but it must be linked into the two directories that the `/sbin/rc` script will be looking for it in. The rights and ownership

in the script are set as follows:

```
# chmod 555 /sbin/init.d/license
# chown bin:bin /sbin/init.d/license
```

The links were created with the two commands below:

```
# ln -s /sbin/init.d/license /sbin/rc3.d/S200lcnsr.svr
# ln -s /sbin/init.d/license /sbin/rc2.d/K800lcnsr.svr
```

The final step is to create the configuration file that the script uses to determine if the license server should be started or not. The pathname is `/etc/rc.config.d/license`. These files are typically owned by `bin:bin`, with rights of `444`. The contents of this example of the file is shown below:

```
Contents of /etc/rc.config.d/license:
export license=1
```

Note that the variable is exported; this is not done in many of the shipped config files and is a source of confusion. The simplest method is the one outlined here. The `rc.config.d` files should export variable settings. That way, when the `/sbin/rc` script sources the `rc.config.d` files, the variables are set and will be exported to the run control scripts. The drawback to this method is that the `/sbin/init.d/license` script cannot be directly invoked to start the license server, as it would not be reading the `/etc/rc.config.d/license` file to get the variable set that causes it to start the server.

AND EVERYTHING IN ITS PLACE

If you start browsing around the HP-UX shipped `rc.config.d` files, you will find that only about 10 percent of the variables set in those files are exported. If the variable is not exported, it is rather useless in the design of the **rc** scripts. That is why you will find that most of the scripts in the `/sbin/init.d` directory (the **rc** scripts) all do their own sourcing of the `/etc/rc.config.d` files. This is a waste, and an aberration in the design.

It seems that someone did not pass the design criteria down to all those that wrote the scripts. So, how do the shipped programs deal with the problem? Instead of having the variables

exported, so that they are passed from the `/sbin/rc` script to the `/sbin/init.d` scripts, the `/sbin/init.d` scripts go ahead and source the `/etc/rc.config.d` files themselves. This means that they are sourced multiple times, instead of just the once that

was in the design of the `/sbin/rc` script. If we wanted to follow this method, we would have to add the following line to our license script, as line 4 in the example:

```
[ -r /etc/rc.config.d/license ] && . /etc/rc.config.d/license
```

Then we could remove the "export" from the `/etc/rc.config.d/license` configuration file. It also means that there was no purpose to the `/sbin/rc` script having sourced the config file, as it was a useless step, the license variable was not passed to the license script. The real problem to this aberration is that these `/etc/rc.config.d` scripts are sourced so many times. In fact, the following line was found in several of the shipped `/sbin/init.d` scripts:

```
./etc/rc.config # Get all of them just in case
```

This shows that the HP-UX startup configuration files (`/etc/rc.config.d/*`) are actually sourced many times during run level changes. This is extremely inefficient, but probably not much of a delay in time, as these files all execute quickly, because they only set variables.

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A New Found Respect For UPS

The uninterruptible power supply (UPS) is the Rodney Dangerfield of IT. It does not get much

respect. However, unlike Rodney, if you need a UPS, the joke is on you. It's no laughing matter when the power goes off and your system crashes. Only then, it seems, does the IT organization consider a UPS a critical network component. Because of the increasing importance of networks and the rising costs of network downtime — reportedly in the hundreds of thousands of dollars — few organizations, even small ones, can afford what UPS marketers call “a major disruption in power.” So UPSs are finally becoming standard, if not respected, companions to many networking components. For instance, “It's pretty much standard operating procedure to bundle a UPS with a server these days,” says John Page, UPS program manager for HP's New Jersey division, which began making UPSs just two years ago. “A lot of resellers won't sell a server without one,” although that attitude has yet to completely work its way down to the workstation, says Page.

UNINTERRUPTIBLE MERGERS

The recent whirlwind of mergers and acquisitions in the UPS market also reflects a new attitude among UPS vendors. The most aggressive vendor in this arena is Exide Electronics (Raleigh, N.C.), the producer of an “Official Licensed Product of the 1996 U.S. Olympic Team.” Exide recently swallowed International Power

Machines and Deltec, a subsidiary of Fiskars in the United States. In addition, General Signal (Shelton, Conn.) purchased Best Power Technology, allowing General Signal to integrate Best Power with its own Sola Electric division. Square D and Merlin Gerin, which were part of the international trading firm Group Schneider, were merged into MGE UPS Systems (Costa Mesa, Calif.) via a leveraged buy-out. This consolidation is “market-driven,” says Doug Milner, director of partnership marketing for Exide. “The large network users (of UPSs) are going to want end-to-end solutions from large vendors, not point solutions from individual vendors. They're not going to want to go to company No. 1 for a small UPS and company No. 2 for a large one.

“These are people who want systemwide protection and management,” Milner adds. “They want [vendors] to do the whole thing — design, installation and training.” On the downside, this consolidation means consumers will have fewer suppliers to choose from in the future and the remaining suppliers are likely to eliminate some “niche” products. As an example, Chris Strug, director of marketing for MGE UPS Systems, notes that “special types of power-conditioning devices, such as those for the medical industry, which has special anti-arcing standards for use in oxygen-rich environments,

may not be profitable for some manufacturers.” The consolidation has the positive effect of intensifying competition among the leading UPS vendors in what will become a \$2 billion industry by the year 2000, notes Venture Development Corp. (Natick, Mass.), a market research firm. Intensified competition should mean more powerful and intelligent products, as well as lower prices.

SNMP MAKES IT HAPPEN

UPS vendors are already working to make their products easier to manage and more transparent to users while integrating them more tightly into networking components. All of the leading UPS vendors now offer SNMP (Simple Network Management Protocol)-compatible modules that allow management systems such as HP OpenView and IBM NetView to manage their products. Most also offer their own proprietary management systems as well. For instance, HP bundles a CD-ROM-based product called the PowerWise management system that lets network managers automatically discover and map all PowerWise UPSs on the network, then configure all UPS and server shutdown parameters from a single workstation. One of the strong suits of HP's PowerWise, says Page, is that it allows a network manager to configure one PowerWise UPS, then replicate that configuration to all the other HP UPSs on the network.

The UPS industry is also moving toward integrating its product with the device it is protecting. For instance, UPSs are being installed in standard equipment racks, where a single UPS

can provide backup power for multiple devices. "In a wiring closet with three or four file servers," says Marc Vernon, manager of corporate communications for UPS vendor Tripp Lite (Chicago, Ill.), "it might be more practical and more economical to run all of the file servers off a single, large UPS, such as a 5KVa (kilovolt amp) capacity unit. This allows a network manager to shut down four separate servers via software, and offers easier installation; it's easier than configuring four UPSs." Integrating a UPS directly into a bridge or a router, both of which are crucial

**The UPS industry
is moving toward
integrating its
product with the
device it is
protecting.**

to the operation of multiple LAN segments, also makes good technology and business sense, says Exide's Milner. "A typical approach would be to make the UPS a component of a stack of stackable hubs, with the UPS a 'black box' that would look just like the other devices in the stack," he explains.

Exide is in fact working with a "worldwide internetwork market leader" to develop such a product, says Milner. Although Exide is contractually bound against revealing its partner in this venture, Milner says the two companies expect to announce their product jointly this summer.

— *Jim Carr is a Saratoga, Calif.-based freelance business and technology writer who has been working in and covering the networking industry for more than 10 uninterrupted years.*

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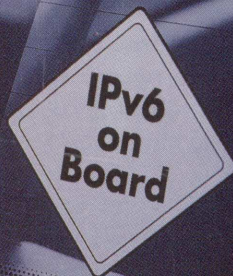
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READER INFORMATION

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Concorde Technologies, Inc., "*The Hewlett-Packard Experts*" is an HP Channel Partner and Value Added Reseller of HP and third-party products for the HP 9000. Concorde's line of products includes HP 9000 systems, application software, CD-ROM solutions, RAM memory, mass storage peripherals and accessories. For the best prices, availability, warranty and support,

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IEM offers affordable solutions for the HP environment, including 4mm and 8mm tape drives, autoteaders and carousels, QIC tape drives, optical drives, fixed winchester drives, floppy disk drives and combination drives. IEM's new Building Block product line is a modular storage solution into which you can slide a number of different disk, tape and optical units. IEM offers an automated backup and archival software solution. Most IEM products are available with an HP-IB or SCSI interface for HP 1000, 3000 and 9000 computers.

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new Products

SOFTWARE

Chariot 1.1 Tests ATM And Wireless Performance

Ganymede Software Inc. released Chariot 1.1, its performance testing software solution for enterprise networks. With the release of Chariot 1.1, network managers can use Windows NT, Windows 3.1 and UNIX to test enterprise network performance, as well as store test results as HTML files for easy posting on intranet Web sites or on the Web. Endpoints support HP-UX, Windows 3.1, Windows NT and Sun Solaris, as well as Windows 95 and OS/2 endpoints.

Console licenses for up to 10 concurrent connections start at \$9,000. Endpoint site licenses begin at \$2,000.

Contact Ganymede Software Inc., 2 Davis Dr., Ste. 124, P.O. Box 12076, Research Triangle Park, NC 27709; (919) 558-1138; info@ganymedesoftware.com; www.ganymedesoftware.com.

Circle 399 on reader card

DDR Announces ACE/Internet

Diversified Data Resources (DDR) announced ACE/Internet, which provides automated monitoring and remote management of UNIX-based Internet servers from a central, secure location. ACE/Internet is based upon DDR's Automated Console Expert (ACE), an automation product for ACP/TPF systems. ACE also supports MVS, VM, VSE and OS/400.

ACE/Internet pricing starts at \$9,900 and is based upon installation size and configuration.

Contact DDR, 7200 Redwood Blvd., Ste. 222, Novato, CA 94945; (800) 233-DDRI; ddri@ddri.com; www.ddri.com.

Circle 398 on reader card

SQL<>SECURE Policy Manager Provides Database Security

BrainTree Technology Inc. announced its SQL<>SECURE Policy Manager. The

product allows users to manage and evaluate security compliance policies and controls for Oracle7 client-server database environments. SQL<>SECURE Policy Manager evaluates RDBMS systems against corporate security standards to proactively reduce the risk of data security exposures.

It evaluates rules and exceptions and generates detailed rule-violation data reports. It also supports numerous rule categories, including operating systems, roles, privileges, configuration parameters, authentication and auditing options.

Prices start at \$7,500.

Contact BrainTree Technology, 62 Accord Park Dr., Norwell, MA 02061; (617) 982-0200; info@brntree.bti.com; www.sqlsecure.com.

Circle 393 on reader card

Suprtool For HP-UX Reads Oracle Databases

Robelle Consulting Ltd. released version 3.8 of Suprtool, the data access utility for HP-UX. With this release, Suprtool/UX can access Oracle views, in addition to reading and writing data files with fixed length records. It allows users to select and sort data from Oracle, and to link multiple tables into a single file for subsequent reporting or processing. A new module, STExport, lets users prepare data for export from HP-UX to virtually any other application or operating platform, without having to write custom programs.

Contact Robelle Consulting Ltd., Unit 201, 15399-102A Ave., Surrey, BC V3R 7K1; (800) 561-8311; info@robelle.com; www.robelle.com.

Circle 391 on reader card

Pure Software Ships Purify For Windows NT

Pure Software announced the availability of its error location software product, Purify, for Windows NT developers. Purify for Windows NT automatically pinpoints runtime errors and memory leaks throughout C and C++ applications, including the

ActiveX controls, OLE components, third-party DLLs and libraries.

Base price for Purify for Windows NT starts at \$498. A subscription including upgrades and maintenance is \$748.

Contact Pure Software, 1309 S. Mary Ave., Sunnyvale, CA 94087; (408) 720-1600; info@pure.com; www.pure.com.

Circle 390 on reader card

ODB/Server V1.6 Adds TCP/IP Support

Thomson Software Products announced version 1.6 of its DB2 data access middleware, ODB/Server (Open Database Server). Enhancements include native TCP/IP support, as well as support for Windows 95.

ODB/Server is user-based priced, starting at \$27,500. Price includes server and workstation components.

Contact Thomson Software Products, 101 Merritt 7, Norwalk, CT 06856; (203) 845-5000; info@thomsoft.com; www.thomsoft.com.

Circle 388 on reader card

Group 1 Software Introduces Database Marketing Software

Group 1 Software released version 1.7 of its DataDesigns database marketing system, which includes enhancements to user interface, expanded report writing capabilities, expanded graphic capabilities and Canadian address standardization. It is a Windows-based system for client-server environments that allows companies to capture data from various host systems without interrupting operations.

Prices range from \$15,000 to \$200,000, depending on the number of users and the size of the database.

Contact Group 1 Software, 4200 Parliament Place, Lanham, MD 20706; (800) 368-5806; info@g1.com; www.g1.com.

Circle 387 on reader card

Intellisoft Debuts Network Management Products

Intellisoft announced DCE/SNARE TCP/IP, which provides configurable authentication, authorization, auditing and fine-grained access control of any TCP/IP-based application. It leverages DCE Security and thus provides a standard-based, robust, scalable and manageable solution for Internets and intranets.

Also announced was DCE/Sleuth, a powerful network analyzer which is fully DCE aware. It provides protocol decoding for DCE RPC using TCP/IP protocols and

includes the ability to decode DCE-provided and user-developed RPCs. An intuitive GUI displays completely decoded RPCs with associated performance and timing information, and provides an array of graphs and reports for analyzing a DCE installation or application.

Contact Intellisoft Corp., P.O. Box 2645, Acton, MA 01720; (508) 635-9070; info@isoft.com; www.isoft.com.

Circle 392 on reader card

BAIN Enhances MANTA 4.0

B. A. Intelligence Networks Inc. (BAIN) introduced MANTA 4.0. It enables users to track, control and manage the various tasks and data involved in product design includ-

ing creation, file management, release/change control and Bill of Materials administration. MANTA 4.0 uses the features of an integrated PDM system, and adds customizable attribute screens, a multiple files per document capability, distributed multiple file servers and a vault server.

It is available on UNIX, Microsoft Windows NT, Windows for Workgroups, Novell, Digital Alpha OSF/1 and OpenVMS; works with all popular CAD/CAM systems; and runs on database systems including Oracle, Sybase, Ingres, Microsoft SQL-Server and Digital Rdb.

Contact BAIN, 21555 Melrose Ave., Ste. 16, Southfield, MI 48075; (800) 788-7419; sales@mantapdm.com; www.mantapdm.com.

Circle 385 on reader card

New From HP

HP SupportPack Comprehensive Network Support, which provide telephone assistance for x86-based networks, including Microsoft, Novell and IBM network operating-system environments; HP, Cisco, 3Com and Bay Networks internetworking devices; and Microsoft BackOffice applications running on HP, Compaq, IBM, Dell and other PC-based servers.

HP SupportPack LAN Support is sold in five- and 10-incident "bundles" that provide LAN administrators with direct telephone access to HP's trained networking professionals. The goal of this bundled support-call service is to enable LAN administrators to maximize system uptime by minimizing repair time. Services include network operating system software usage and configuration assistance, as well as fault isolation and remote problem resolution for servers, clients, hubs, repeaters and network cards. Prices range from \$424 for five-incident bundles during standard business hours, to \$1,119 for 10-incident bundles during extended, 24x7 coverage.

HP SupportPack Comprehensive Network Support extends beyond HP SupportPack LAN Support to provide multivendor network-software problem management for networks including routers, switches, bridges and WAN connections. Coverage for a selection of Microsoft BackOffice server applications may be added as an option. It is available during standard business hours or, optionally, on a 24x7 basis. Prices start at \$3,975 per server per year for coverage during standard business hours.

HP DeskJet 870C Professional Series — HP announced two new DeskJet printers — the HP DeskJet 870Cse (retail) and HP DeskJet 870Cxi (resellers). They are designed for the PC and Macintosh platforms, and replace the HP DeskJet 850/855C family of printers.

Both have a print performance of 8 ppm and 600 x 600 dpi in black, and 4 ppm and 600 x 300 dpi in color. Fonts include: 110 TrueType Windows fonts available through FontSmart (and 16 more through the HP DeskJet font collection), 27 TrueType fonts for Mac customers and 26 built-in scalable typefaces for standalone DOS users.

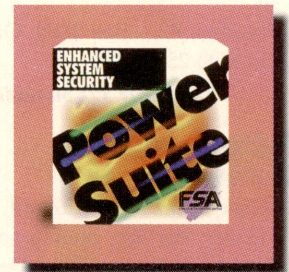
When used in a peer-to-peer configuration, the printer comes with everything necessary to share through a host PC in a Windows 95 or Windows for Workgroup environment. Installation is made easy through software tools already integrated into both Windows platforms.

When connected to a LAN via the optional HP JetDirect EX Plus print server, the DeskJet 870C provides bi-directional communication which enables Novell NetWare and Windows 95 users to receive automatic feedback messages from the printer.

For more information, contact your local sales office or call (800) 533-1333.

Network-Support Software — HP announced the availability of two packaged network-support software offerings: HP SupportPack LAN Support and

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CIRCLE 197 ON READER CARD

EnterSys Releases Enterprise Manager

EnterSys released Enterprise Manager. It is composed of three modules: a Manager's module, which supports project and staff scheduling, project tracking, time sheet approval and comprehensive reporting and graphics; a Staff module, which provides each team member with an individualized task to-do list and a flexible time sheet for recording project and non-project time; and an Administrative (ADM) module, which includes system customization tools, security options and an active Organization Chart supporting distributed project and staff management while providing enterprisewide data roll-up and reporting. The modules cost \$750, \$175 and \$5,000, respectively.

Contact EnterSys, P.O. Box 2800, Orleans, MA 02653; (508) 255-7900.

Circle 372 on reader card

Pilot Software Launches Pilot Discovery Server

Pilot Software Inc. announced Pilot Discover Server, the data mining component of the comprehensive Pilot Decision Support Suite. The Pilot Decision Support Suite is a comprehensive OLAP environment with a dynamic, multidimensional

architecture that reduces consolidation time and server size. The suite includes: Pilot Discovery Server, Pilot Analysis Server, Pilot Designer, Pilot Desktop, Pilot Analysis Library and the Pilot Excel Add-in. Pricing, which includes software, training and consulting, starts at \$100,000.

Contact Pilot Software, One Canal Park, Cambridge, MA 02141; (617) 374-9400; pilotinternet@pilotsw.com; www.pilotsw.com.

Circle 382 on reader card

Bering Launches RAIDRUNNER 10

Bering Technology announced RAIDRUNNER 10, a disk array which supports RAID 3 and 4 for applications requiring high transfer rates or high transaction rates. RAIDRUNNER 10 integrates IDE drives into a compact chassis and enclosure. The disk array unit has an integrated IDE-to-SCSI controller that connects to the host computer via a standard SCSI-2 interface.

RAIDRUNNER supports most computer platforms and SCSI adapter cards. Built-in intelligence on the controller eliminates the need for any SCSI drivers, additional software or to use any esoteric SCSI commands. RAIDRUNNER is supported on HP-UX, NetWare, Windows NT,

Windows, OS/2, UNIX, Digital UNIX and Solaris AIX. Price starts at \$6,990 for 5 GB configuration.

Contact Bering Technology Inc., 1357 Dell Ave., Campbell, CA 95008; (408) 364-6500; info@bering.com.

Circle 371 on reader card

Bac-Tech Introduces PC-Compatible EDI

Bac-Tech Systems Inc. announced its PC-compatible VisionEDI software. Written in Progress V7, VisionEDI features a simple GUI and familiar point-and-click Windows technology. It features: a cross reference tables map to the user database, a network processing help screen, data interchange control number maintenance, standard database maintenance and view/print EDI logs. Price is \$4,995.

Contact Bac-Tech Systems, 270 Lafayette St., New York, NY 10012; (800) 334-8288.

Circle 383 on reader card

SCH, Digital Controls Provide LP Plus

SCH Technologies and Digital Controls Corp. joined together to sell LP Plus, a print management and control solution for UNIX environments developed by Digital Controls. LP Plus allows users to monitor each printer's workload and status, print any page or range of pages in a job, retain spooled jobs in the queue, suspend print requests, restart from the last page printed, view job status and manage forms.

SCH also will sell WinPrint and NovPrint, tools that can be used in conjunction with LP Plus or alone to integrate printing in mixed Windows, Novell and UNIX environments.

Contact SCH, 895 Central Ave., Cincinnati, OH 45202; (513) 579-0455; info@sch.com; www.sch.com.

Circle 381 on reader card

HARDWARE

Workstation Direct Provides Memory For HP 9000/3000s

Workstation Direct introduced DRAM memory modules designed for HP 9000 and HP 3000 workstations and servers. Four memory modules are available for the HP 9000 E-Class servers, HP 9000 Series 725/715/712/710/705 workstations and HP 3000 9x8 servers.

The upgrade kits are: HPRO/8 K (8 MB), consisting of two 4 MB SIMM modules; HPRO/16 K (16 MB), consisting of two 8 MB SIMM modules; HPRO/32 K

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(32 MB), consisting of two 16 MB SIMM modules; and HPRO/64 K (64 MB), consisting of two 32 MB SIMM modules.

Contact Workstation Direct, 55 Holly Hill Lane, Greenwich, CT 06830; (800) 406-6474; pf@wksdirect.com; www.wksdirect.com.

Circle 379 on reader card

PNY Ships Memory For HP 9000 J/K Systems

PNY Electronics Inc. shipped memory expansion kits for HP 9000 J-Series workstations and K-Class servers. PNY's HP 9000 J&K memory upgrade kits consist of two modules and are available in 32 MB and 128 MB increments.

The kits are compatible with HP 9000 J-Series models J200 and J210, as well as the K-Class server models K200 and K210. Contact PNY Electronics Inc., 200 Anderson Ave., Moonachie, NJ 07074; (201) 438-6300; home@pny.com; www.pny.com.

Circle 376 on reader card

HP Services Imperial's MegaRam Line

Imperial Technology announced an agreement with HP, which provides onsite service for Imperial's MegaRam line of solid-state disks. Products covered by the agreement include the MegaRam-500 and MegaRam-3000. The MegaRam-500 is a 5.25-inch unit that is available for internal mounting or in a desktop enclosure and it has a capacity range of up to 1 GB. The MegaRam-3000 is available in a desktop enclosure or a 19-inch rackmount tray. It has a capacity range from 67 MB up to 3.5 MB.

Contact Imperial Technology, 2305 Utah Ave., El Segundo, CA 90245; (800) 451-0666; itmarketing@imperialtech.com; www.imperialtech.com.

Circle 373 on reader card

SanDisk Produces IDE FlashChip

SanDisk Corp. introduced the IDE FlashChip, a single chip storage solution with flash memory and an IDE controller. The IDE FlashChip requires low power and operates in all read/write modes from a single supply of either 3.3v or 5v. It comes in a 144 pin TQFP (thin quad flat pack) standard package (22 x 22 x 1.6mm) and is available in 2 and 4 MB capacities. Price is \$53 for 2 MB, and \$75 for 4 MB, expandable by adding flash modules in increments of 4 or 10 MB.

Contact SanDisk Corp., 3270 Jay St., Santa

Clara, CA 95054; (408) 562-0500; info@sandisk.com; www.sandisk.com.

Circle 378 on reader card

Interphase ATM Adapters OEMed By HP

Interphase Corp. announced an agreement with HP, where HP will OEM Interphase ATM adapters for HP 9000 systems using the HP-PB (Precision Bus) I/O architecture. The adapters use a DMA bus master

architecture which provides a sustained 16 MB data rate across the Precision Bus for maximized performance. In addition, 2 MB onboard buffer memory accommodates intermediate bus latencies and a fully write-posted interface provides improved Precision Bus use.

Contact Interphase Corp., 13800 Senlac, Dallas, TX 75234; (214) 654-5325; fastnet@ipphase.com; www.ipphase.com.

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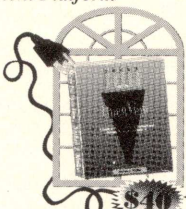
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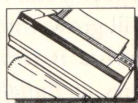
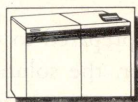
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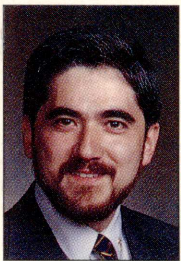
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Don't Get Stuck On GUI Solutions



John Battista
Technical
Services
Manager for
ESI/Technologies

Given the plethora of GUI solutions around these days, when shopping the market for a GUI product to run on my HP system, how do I know that a particular solution will give me what I need in the long haul? This can be a very sticky question, especially if you don't know what to look for, or more correctly perhaps, in the case of GUIs, what you are looking at. In my 15 years in product development and design, I have studied many highly functional — or so-called — fully-operational software solutions for my white papers and seminar presentations. And, it has been my experience that they are not as complete or as functional as they may appear on the surface. A little sleuthing is required to reveal what's behind those attractive GUI exteriors.

Review all the modules of the applications you are considering.

For example, in manufacturing solutions, don't just look at shop floor control and production scheduling, investigate other integrated subsystems like distribution and warehouse management. Many applications out there will only be 50 percent complete.

Consider only those solutions that have been programmed on a platform that can expand to support future objectives.

For example, until Oracle 7.16 was released you could not manipulate distributed processing. And, keep in mind what hardware you are using. Many of today's GUI solutions are hardware-independent. But make certain they support not only your existing environment, but can also grow with you as you move to new platforms or expand operations. Extensibility and flexibility are key.

Study how the software was developed.

For example, a product generated purely in CASE is infinitely easier to modify as your needs change. CASE is much like CAD and engineers trained in a CAD environment can see the entire substructure and know the entire logic when something needs to be modified. A software solution that uses CASE methodology will facilitate training and minimize re-engineering headaches when it's time to program future enhancements. Take a long, hard look at how easy it is to make future changes and implement those changes.

Speaking of programming, consistency is essential. When one programmer works on one enhancement this week and another programmer works on a different enhancement next week, the danger exists that these two bodies of work might not integrate completely. An integrated CASE solution will guarantee that these combinations will be integrated and minimize "spaghetti code." Just as an architect's blueprint allows you to see what the house will look like when it is built, CASE technology allows you to put the entire plan on paper before you actually start coding the pieces together. A solution not built with CASE is like buying a used car — you never know what you're getting, and you're not sure how long it will last.

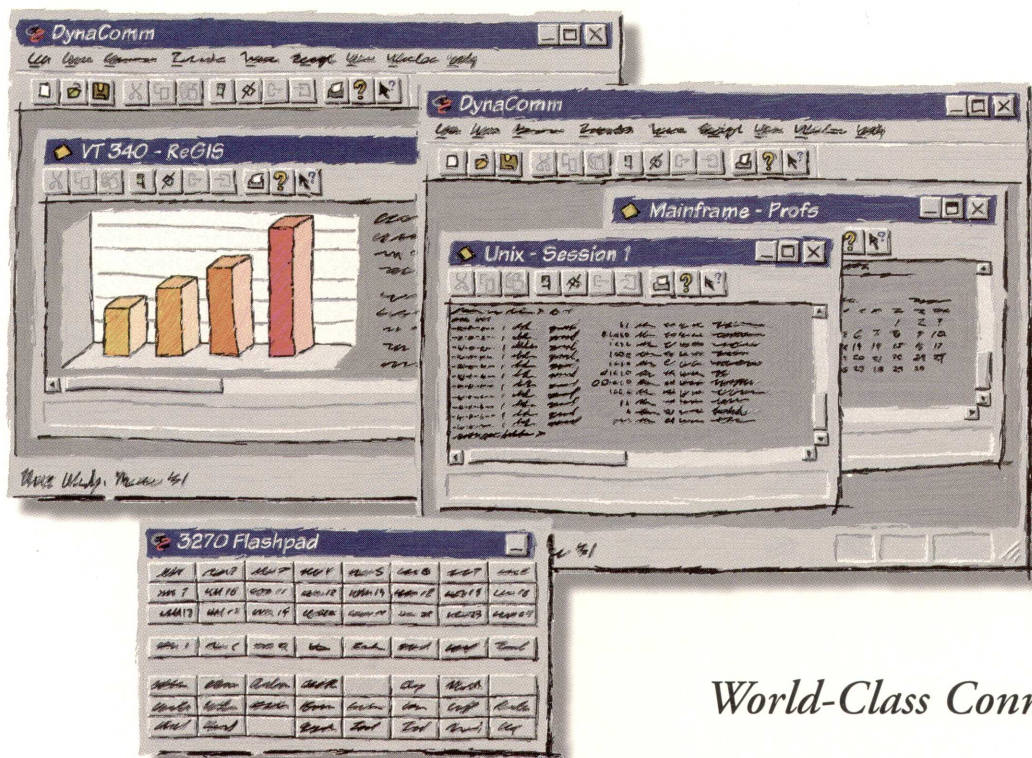
Buy the service and technical support you may need down the road.

Always be prepared to change with technology. And remember, the solution you buy today must expand to support your future needs. Invest in a package that will grow with you — not against you.

— John Battista is technical services manager for ESI/Technologies of Buffalo, New York. He can be reached at support@esitech.com.

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